学位論文

A near infrared survey of the Large Magellanic Cloud

近赤外線による大マゼラン銀河のサーベイ観測

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ABSTRACT

I conducted a regional survey of the Large Magellanic Cloud (LMC) with a near infrared camera with angular resolution of $10''.0$ at the J, H and K' band (1.25, 1.65 and 2.15 μm, respectively). The limiting magnitudes of the survey were 13.6, 11.9 and 10.0 magnitude (3σ) at the J, H and K' band, respectively. A point source catalog has been compiled. The sampling of the catalog is complete up to 9.0 magnitude at the K' band. The position, the magnitudes and standard errors of the magnitudes at the J, H and K' bands have been derived for 1599 point sources.

The near infrared color-color diagram shows that most of the detected sources are not main sequence stars. Many of them are lying in the region where luminous late type stars occupy, but a number of sources occupy the region where no normal stars occupy. Some of these sources are identified as super giants covered with thick dust shells. The dominant components of the sources are likely to be red super giants (RSG), luminous M type giants and AGB stars in the LMC.

The distribution of RSG candidates strongly concentrates in the region 1 ($5h39m, -69°18'$), the south of 30 Dor. There is another concentration at the region 3 ($5h28m, -69°10'$), Shapley constellation II. The densities of the RSG candidate in these regions are significantly greater than the density of RSG in the solar neighborhood, which reveals that the star formation was more active than the present stage in recent $10^6 \sim 10^7 yr$. The distribution of luminous M giants and AGB star candidates concentrate in the region 1. There are two other concentrations. One is the region 4 ($5h18m, -69°33'$), Shapley V constellation, and the other is the region 2 ($5h34m, -69°15'$). The distribution of RSG candidates and luminous giants candidates is spatially different from each other. CO line flux has peaks at the south of 30 Dor region ($5h40m, -70.°3$). The absence of the K source around the peak of the CO line flux shows that the star formation in the region has not started or are in a very early stage. The difference of the distribution among the RSG candidates, luminous M giants candidates and CO line emission shows that the position of active star forming region has changed in the recent 10^8 years.

The detected sources are cross-identified with IRAS Point Source Catalog. Although the sensitivity of my survey is much higher than IRAS survey if the source has a black body spectrum, only 62 of 680 IRAS sources in the region coincided with the detected sources. The spectrum energy distribution (SED) from $1.25\mu m$ to $100\mu m$

of the cross-identified sources are attached in the appendix. The half of them are well described by the black body spectrum and identified with the Galactic foreground stars, though the others show flat or redder spectrum. Some of these sources are confirmed as RSGs obscured by the dust shell by former observations. The candidates of star with dust shell are presented in the appendix.

Contents

1. Introduction

Observation in the near infrared (NIR) wavelength ($1 \sim 5\mu m$) is a powerful tool to investigate young stellar objects in dark clouds and evolved stars with their dust shells because of the following reasons. First, the NIR light is less sensitive to the effect of the interstellar extinction than visible light ($A_{2.2\mu m} \simeq \frac{1}{10} A_{0.55\mu m}$;Cardelli et al. 1989). Using the NIR light, therefore, we can investigate the dusty regions even where stars are totally obscured at the visible wavelength. Second, since stars like young stellar objects and evolved stars have relatively cool ($\sim 3000K$) photospheres, the spectrums of such stars peak in the NIR wavelength.

In those days, NIR observations were performed with single element detectors. Since there was no photographic plate that was sensitive in the NIR wavelength, NIR sky survey was limited in sensitivity, sky coverage and angular resolution. The first complete sky survey in the NIR wavelength was Two Micron Sky Survey (TMSS), which was conducted in the 1960s at Caltech (Neugebauer et al. 1969). They used a 1.5 meter telescope with eight of single element PbS detectors and achieved a limiting magnitude of 3 magnitude at the K band with an angular resolution of $4'$.

Nowadays, NIR imaging devices are available for astronomical applications. The application of NIR imaging device for astronomy was started in early 1980s at the University of Rochester using 32 × 32 InSb IR CCD (Forrest et al. 1983). At the meantime, 1024 × 1024 InSb NIR detectors, 1024 × 1024 HgCdTe NIR detectors and 1040 × 1040 PtSi NIR detectors are applied for astronomical observations. One of the aim of this study is to establish NIR sky survey with high sensitivity, large sky coverage and high angular resolution using such a large format NIR detector.

512 × 512 PtSi NIR detector has been selected as the detector of my survey instrument because of the following reasons. (1) The format is large. In order to cover large area with high spatial resolution, the format of the detector is essentially important for the efficiency. At the time, 512 × 512 PtSi NIR detector was one of the largest NIR imaging devices at the NIR wavelength that could be used for astronomical applications. (2) Good uniformity in pixel response. (3) Less bad pixels. In order to achieve complete survey, the dead area among the frames should be small. 512 × 512 PtSi NIR detector had few (in most case, no) bad pixels. (4) Good stability of performance. (5) Good chip availability. Since 512 × 512 PtSi NIR detector is fabricated with the Silicon VLSI technology, the chip is available with low cost.

A wide field infrared telescope (WIT) system was developed for this study. A wide field of view ($40' \times 52'$) and relatively high angular resolution ($5'' \times 6''$ per pixel) have been achieved using a small Newtonian telescope (25cm F/3.5) and a large format detector (512 × 512 PtSi image sensor). Using the WIT system, the Galactic center region, the Small and Large Magellanic Clouds had been surveyed. I focus on the results of the Large Magellanic Cloud (LMC) survey in this paper.

The LMC is a good laboratory for astrophysics because of the following reasons. (1) The

distances to the sources can be well determined because the distance modulus to the LMC is well determined $[(m-M)_0 = 18.5 \pm 0.15 mag]$ and the diameter of the LMC is small ($\sim$ 5 kpc) compare to the distance ($\sim$ 50 kpc) (Westerlund 1990). (2) In the LMC, there are almost all kinds of the objects that exist in our Galaxy. The LMC has been surveyed by various methods. There are a large number of optical surveys including spectroscopic surveys by objective prism.

There are also some surveys focusing on star forming activity: mid and far infrared (MIR and FIR) surveys by the famous IRAS satellite, a complete CO 1-0 survey (Cohen et al.1988) and [CII] emission line survey (Mochizuki et al. 1994). NIR survey has some advantages to investigate star forming regions. (1) The effect of the extinction is small relative to optical survey. (2) The higher spatial resolution could be achieved comparing to the MIR, FIR or Radio surveys.

There were plenty of NIR photometric observations of the stars in the LMC but the samples of the stars were strongly biased by particular surveys (IRAS or optical surveys). There were some unbiased NIR surveys (Frogel et al. 1983; Hyland et al. 1992) but the surveyed areas were limited. There was no unbiased NIR survey of the LMC which covered large area with sufficient deepness and angular resolution.

In this study, the $3^\circ \times 6^\circ$ area of the LMC has been surveyed at the J, H and K' band (central wavelengths are $1.25, 1.65$ and $2.15 \mu m$, respectively) with spatial resolution $10''$. The limiting magnitudes (3σ) are 13.6, 11.9 and 10.0 at the J, H and K' band for point sources, respectively. A point source catalog, which contains 1599 sources, has been compiled. The sampling of the catalog is complete up to 9.0 magnitude at the K' band. Most of them are likely to be red super giants (RSG), luminous M type giants and AGB stars in the LMC. Some of the sources are identified with cocooned RSGs.

The observational method is described in the section 2 as well as the observational instruments. The method of compilation of the point source catalog is described in the section 3. Finally, I discuss the recent star forming history and objects with dust envelops in the LMC in the section 4. The NIR point source catalog and the SEDs of IRAS objects are compiled in appendix.

2. Observation

The $3^\circ \times 6^\circ$ area of the LMC has been observed at the J ($1.25 \mu m$), H($1.65 \mu m$) and K'($2.15 \mu m$) bands with an angular resolution of $4.''6 \times 6.''0$ per pixel. The limiting magnitudes for point sources were 13.6, 11.9 and 10.0 magnitude (3σ) at the J, H and K' band, respectively. The observations were performed from October to November 1994 at the Siding Spring Observatory (SSO) in Australia under collaboration with the University of New South Wales (UNSW). A wide field near infrared telescope system was used for the observations. The system was attached onto the Automated Patrol Telescope (APT), which was operated by the UNSW.

2.1. Observational instruments

2.1.1. Wide field infrared telescope system

The characteristics of the wide field infrared telescope (WIT) system are summarized in table 1. The system consisted of a Newtonian telescope, an infrared camera and data acquisition system. The entire system was controlled by programs running on UNIX.

Telescope The telescope that I used was a 25.0cm/F3.5 Newtonian telescope (Parks Optical). The effective diameter of the aperture was reduced to 20.0 cm because I used under-sized secondary mirror. In order to archive a wide field of view with simple optics, the detector was placed at the Newtonian focus of the telescope. In order to reduce the coma aberration, a meniscus lens with no power was installed as the window of the infrared camera. The full width of half maximum of the point spread function (PSF) was $7''.0$. The size of PSF was almost uniform among $50'$ field.

Infrared camera The infrared camera that I used was 512×512-PtSi infrared Camera (Ueno et.al. 1992). The camera consisted of a cold baffle, band-pass filters and an infrared imaging device. They were installed in a cryostat.

This camera had no Lyot stop. In order to reduce the contamination of the thermal emission from the warm structures inside the telescope, the cold baffle was installed between the window of the dewar and the filter wheel.

Three band-pass filters (J, H and K') and an aluminum plate as a dark filter were installed in the filter wheel. The central wavelengths of the J, H and K' filters were 1.25, 1.65 and 2.15 μm, respectively. The band widths of the filters were $0.3\mu m$. The baffle and filters were cooled down to the liquid Nitrogen temperature in order to reduce the thermal emission.

The infrared imaging device that I used was 512×512 PtSi Schottky-Barrier IR CSD, which was developed by Mitsubishi Electric Corporation (Kimata et.al. 1987). The performance of the device for astronomical application was evaluated by Ueno et.al. (Ueno et al. 1992) and Ito et al. (Ito et al. 1995). The pixel size was $20 \times 26\mu m^2$. The total number of pixel was 512×512. The quantum efficiencies of the device at J, H and K band were 0.06, 0.03 and 0.03, respectively. The fill factor (the ratio of the sensitive area in the pixel) of the device was 58%. In order to reduce dark current, the chip was cooled by Solid Nitrogen. The dark current was typically 10 electrons per second at the operation temperature ($\sim$ 59K). The dark current was sensitive to the chip temperature. In order to stabilize the chip temperature, the resistance of the on-chip Aluminum resistance was monitored each exposure.

The cryostat of the camera was HD-3 dewar manufactured by Infrared Laboratories, Inc. The cryostat had two vessels. The outer vessel holds liquid Nitrogen to cool the radiation shield, filters and cold baffle. The inner vessel holds solid Nitrogen. The Nitrogen was frozen by decompression.

The detector was thermally connected to the inner vessel.

Data acquisition system Figure 3 shows the schematic diagram of the data acquisition system. The data acquisition system consisted of a CCD controller, a CCD driver, an analog to digital converter (A/D converter) and a host work station. The CCD controller generated CCD clock pattern. The CCD driver drove the detector according to the CCD clock pattern. The output signal from the detector was digitized by the A/D converter. The digitized signal was accumulated by the CCD controller and stored into the on-board frame memory. Finally, a program running on the host work station fetched the image data from the frame memory and processes them into a Flexible Image Transport System (FITS)[1] file.

The CCD driver module and the A/D converter module were developed by Ueno et al.(Ueno et al. 1992). The CCD driver module consisted of amplifiers and potentiometers. The CCD driver amplified the CCD clock patterns and provided CCD clocks of suitable voltage level for the detector. The A/D converter module consisted of amplifiers and an A/D converter . The amplifiers amplified the output signal from the detector and the A/D converter digitized the signal into 16 bits digital signal with $2.5\mu s/sample$ sampling speed. The conversion factor was 7.0 electron per A/D conversion unit (ADU). The read-out noise of the system was 120 electrons.

The CCD controller that I used was COGITO-2: a general purpose CCD controller (Miura et.al. 1996). COGITO-2 had the following functions: (1) Clock pattern generation and (2) Accumulation of the digitized signal from the A/D module.

The clock pattern generation was performed with the following modules: clock pattern generator (CPG) RAM , program (PRG) RAM and two timers (TM1 and TM2). The CPG RAM stored many kinds of clock pattern segments. The timers were used to count exposure time. The entire CCD clock pattern was expressed the sequence of the clock pattern segments and the exposures that was stored in the PRG RAM. There are many common patterns in a sequence of a CCD clock pattern. The hierarchical expression of the CCD clock pattern minimized the size of memories required to describe the CCD clock pattern. The CPG RAM and the PRG RAM had 128k word memories, which were enough to operate almost all kinds of CCDs currently used. The contents of the CPG RAM and the PRG RAM were changeable from the host workstation easily. It was very helpful for developing the optimized clock pattern.

The digitized signal was accumulated by on-board accumulator and stored in the on-board frame memory. The signal of each pixel was determined by the correlated multi sampling. Figure

[1]There are six fundamental references on the Flexible Image Transport System (FITS), Wells et al. 1981, Greisen et al. 1981, Grosbol et al.1988, Harten et al.1988, Ponz et al.1994, and Cotton et al.1995. The NASA/Science Office of Standards and Technology (NOST) has codified FITS as endorsed by the IAU into a formal standard, the *Definition of FITS*(NOST 1995). A number of useful information on FITS could be retrieved from FITS Support Office Home Page (URL http://www.gsfc.nasa.gov/astro/fits/fits_home.html).

2 shows the schematic diagram of the correlated multi sampling. For each pixel, the base level and the signal level were measured three times. The signal value were calculated by the following

$$signal = (b1 + b2 + b3 - s1 - s2 - s3)/3$$

The addition and subtraction in the calculation were operated by the on-board accumulator. The division was operated by the host computer in the later analysis.

Finally, a program running on the host work station fetched the data in the FRM on COGITO-2 via VME-Bus and created an image data file in FITS format.

2.1.2. Mounting

The WIT system was mounted onto the APT. The APT was designed to be controlled through the network. The mounting of APT was controlled by an IBM PC. The PC had a TCP/IP interface.

The pointing accuracy of the APT was rather poor. There was back-rash ($\sim$ 5 arcmin.) in the direction of the declination. The pointing became unstable for a while ($\sim$ 2 minutes) when the telescope came across from the northern sky to the southern sky or from the southern sky to the northern sky. The friction drive of the right accession axis slipped in the case of large slew ($\sim 20°$) of the telescope. Since the encoder was install at the driving motor, the positional accuracy became poor ($\sim$ 10 arcmin.) in those cases. Sometimes, it became impossible to point the program stars into the field of view of the WIT system. In those cases, the APT was used as a guiding telescope. The APT is a Schmidt telescope with a large format optical CCD (770×1152), which has a large field of view ($2° \times 3°$). Precise position and orientation of each frames were determined in the later analysis.

2.1.3. Softwares

The WIT system and the mounting system were controlled by commands running under the UNIX on the host workstation. The observational sequence (the sequence of slewing the telescope and taking the exposures) was written in shell script on the UNIX. The observations were performed automatically according to the shell script.

Several softwares were prepared for the survey. (a) Low level softwares for controlling the COGITO-2, (b) Exposure program, (c) Communication software for the APT, (d) Shell script generator and (e) Utility softwares.

(a) Low level softwares for controlling the COGITO-2:
The low level softwares consisted of a clock pattern compiler and basic COGITO-2 control programs (COGITO BIOS). CCD clock pattern was written in text files. The clock pattern

compiler compiled them into binary files. The compiler was developed by Hitoshi Miura (Miura et al. 1996). COGITO BIOS was interface programs for COGITO-2. Programs for reading and writing CPG, PRG and FRM RAM were prepared. The "start" command, which was used to initiate the CCD clock pattern sequence, was prepared. These BIOS program was developed by Hitoshi Miura and Yosuke Ohno (Miura et al. 1996).

(b) Exposure program:
Exposure program was an integrated program for exposures. This program (1) sent clock pattern from work station into CPG and PRG RAMs, (2) initiated the CCD clock pattern sequence using COGITO BIOS programs, (3) prepared FITS header informations: observational time , celestial coordinates of the frame, calculation of the airmass and filter type, and (4) fetched image data from FRM and creates FITS file.

(c) Communication software for the APT:
The communication software for the APT were developed by Michael C. B. Ashley at the UNSW. The software used UNIX socket protocol to communicate with the host computer of the APT (an IBM PC). The software included "Slew" command that slewed telescope to a given celestial coordinate.

(d) Shell script generator:
The observational schedule, the sequence of exposing and slewing the telescope, was written in Unix Shell scripts. The shell script consisted of the sequences of the "exposure" command and "slew" command. The observations was performed in several manners. The programs that generated Shell script for various observational mode were developed.

(e) Utility softwares:
Several utility programs were prepared for the support of observations.
"view": a movie program. This command initiated "start" command successively and displayed the image on X window. This program had "magnify mode", in which the program traced a star and showed the close view of the star image. This was used in the focusing of the telescope.
"XLook_fits": a FITS file viewer. This program searched the latest images that was stored on the hard disk drive of the workstation and displayed it on the X window. Sky subtraction or dark subtraction could be performed. This program was used to monitor image quality during the observations.

2.2. Observations

The southern part of $3^\circ \times 6^\circ$ centered at $(5^h20^m, -69^\circ30')$ has been observed at the J, H and K' bands. The date of the observations and the name of the filter used are summarized in the table 2.

The observations were taken by rastering the telescope in a 6×12 grid with $30'.0$ spacing in

aperture diameter	25.0cm (20.0cm)		
focal length	87.5cm		
detector	PtSi512 × 512 IR CSD		
plate scale	$4.''7 \times 6.''1$		
field of view	$40.'2 \times 52.'3$		
filter	J	H	K'
central wave length	$1.25\mu m$	$1.65\mu m$	$2.15\mu m$
band width	$0.3\mu m$	$0.3\mu m$	$0.3\mu m$
system throughput	1.5%	0.9%	1.0%
limiting magnitude	13.6mag	11.9mag	10.0mag
S/N=3,360 sec exp.			

Table 1: Characteristics of the wide field infrared telescope system

Month	Date	Filter
Oct.	4	K
	10	K
	11	H
	13	K
	14	K
	15	H
	23	H
	24	H
	29	J
	30	J
	31	J
Nov.	1	J
	2	H
	5	J
	8	H
	9	J

Table 2: The date of the observations and the filter type used.

the direction of the right accession and $35'.0$ spacing in the direction of the declination. Each grid was imaged twice at each band. The integration time of each frame was 180 seconds. The two frames at the same band were shifted in position ($\sim 2'$) in order to (1) reject cosmic ray events and transit objects in the later analysis and (2) reduce the effect of the stars in creating the flat field image.

The $3° \times 6°$ area was scanned along the right accession The surveyed area was scanned along the right accession from west to east. This direction of scan was chosen in order to minimize variation of the telescope position relative to the ground. Less variation of the relative position to the ground induced less variation of the amount of the atmospheric extinction and less variation of focus which was slightly unstable for the elevation of the system. The focus was monitored each exposure using the quick analysis program and was re-adjusted whenever the FWHM of the point source exceeded 2.0 pixel.

The dark frames were obtained using the cold dark filter at the beginning and at the end of the observations each night. The dark frames were obtained for every integration time: 12, 60 and 180 seconds. Eight of the dark frames were obtained for each integration time. In order to monitor variances of the dark and bias level, an image with a warm dark filter (a cap over the window of the dewar) were taken in every 3 hours. The fluctuation of bias level was less than 5 ADU.

The standard star observations were performed in every 3 hours. The standard stars were selected from Elias's faint standard stars (Elias et al. 1982). The exposure time for the standard stars was 60 seconds at the J and H band and 180 seconds at the K' band. Two or three standard stars were observed in every 3 hours. Six frames were taken for each star.

2.3. Data reduction

The output signal of the detector may be written as follows,

$$Signal_i = (Bias_i + Dark_i \times T) + Resonse \times Norm_i \times Flux_i \times T, \qquad (1)$$

where i is the identification number of pixels, $Bias_i$ is a constant term of the system, $Dark_i$ is the amount of the dark current per second per pixel, $Norm_i$ is the normalization factor of the response variation among the pixels, which satisfied $average(Norm_i) = 1$ and $Response$ is the system response.

The final goal of this section is to compensate the effect of the bias, dark current and the response variation among the pixels by solving that equation as follows,

$$Flux_i \times Resonse \times T \;=\; \frac{Signal_i - (Bias_i + Dark_i \times T)}{Norm_i}.$$

In order to reduce a raw image into a realistic image, the bias and dark must be subtracted from the raw data. This is called "dark subtraction". Then, the pixel to pixel variation of the response

must be corrected. This is called "flat fielding". These standard data processes (dark subtraction and flat fielding) were performed with the IRAF software package [2]. In the following, the way of dark subtraction and flat fielding are described. System response function is not determined because I always used the relative value of the flux of stars to that of standard stars. The list of the standard stars, the way of determination of the relative value of the flux of stars to that of some standard stars were discussed in the later section.

2.3.1. Dark subtraction

The amount of bias and dark current could be determine if $Flux_i$ in the equation (1) was set to zero as follows,

$$\begin{aligned} Darkframe_i &\equiv (Bias_i + Dark_i \times T) + Resonse \times Norm_i \times 0 \times T \\ &= (Bias_i + Dark_i \times T). \end{aligned}$$

The frames taken in this manner is called "dark frame". I used the cold dark filter in order to cut the flux in taking the dark frames.

This dark frame is subtracted from all raw frames. The equation (1) becomes as follows,

$$\begin{aligned} DarkSubframe_i &\equiv Signal_i - Darkframe_i \\ &= Resonse \times Norm_i \times Flux_i \times T, \end{aligned}$$

where $DarkSubframe_i$ is dark subtracted frame.

In order to estimate precise value of the bias plus dark current for each pixel, the mean value among the eight frames of the dark frames was used as the value of each pixel of the dark frame. In order to reduce the effect of cosmic ray event, the median value of each pixel among the eight dark frames was used as the mean value.

2.3.2. Flat fielding

The pixel to pixel response variation is corrected as follows,

$$Flux_i \times Response \times T = DarkSub_i / Norm_i.$$

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[2]*IRAF is distributed by the National Optical Astronomy Observatories, which is operated by the Association of Universities for Research in Astronomy, Inc.(AURA) under cooperative agreement with the National Science Foundation.

In order to obtain the normalization factor of the response $Norm_i$, an image of uniform light source were obtained. This is called "flat field" image.

$$FlatFieldImage_i \equiv Resonse \times Norm_i \times Flat \times T,$$

where $Flat$ is flux from the uniform light source and is a constant value among the pixels.

The normalization factor is derived from the flat field images as follows,

$$Norm_i = \frac{FlatFieldImage_i}{Resonse \times Flat \times T}.$$

Because $Norm_i$ satisfies $average(Norm_i) = 1$,

$$\begin{aligned} average(FlatFieldImage_i) &= average(Resonse \times Norm_i \times Flat \times T) \\ &= Resonse \times average(Norm_i) \times Flat \times T \\ &= Resonse \times Flat \times T, \end{aligned}$$

therefore,

$$Norm_i = \frac{FlatFieldImage_i}{average(FlatFieldImage_i)}.$$

I chose the sky as the uniform light source because the sky was a good uniform light source except the star and the sky was bright in the near infrared enough to obtain high signal to noise ratio as a flat field. In order to obtain a precise flat field, all images that were taken on the same night were combined after the normalization. In order to reduce the effect of the stars, the median values of each pixel among the frames were taken as the value of each pixel on the flat field frame.

2.4. Positional calibration

As mentioned in the previous section, the pointing accuracy of the APT was poor (~ 10 arcmin.). The precise transformation parameter — the celestial coordinates of the image center, the orientation and the focal length — of each frame have been determined by sources which are listed in the guide star catalog (GSC). The equinox was based on J2000.0. The position of each frame has been determined with an accuracy of 1 pixel ($< 5.0''$).

The transformation from the celestial coordinate to the pixel coordinate consisted of two steps: (1) zenithal projection (tangential projection) from celestial coordinate to the physical coordinate on the focal plane and (2) linear transformation from the physical coordinate to the pixel coordinate.

$(\alpha - \delta)$ Celestial coordinate

$\updownarrow$ • zenithal projection (tangential)

$(X - Y)$ Physical coordinate on the focal plane

$\updownarrow$ •linear transformation (rotation)

$(x - y)$ Pixel coordinate of the image

The transformation between the celestial coordinate and the physical coordinate on the focal plane ($\mathbf{X} = \mathrm{C2X}(\mathbf{C}; f, A, D)$) could be written as follows,

$$X = -f\frac{\sin(\alpha - A)}{\cos D\cos(\alpha - A) + \tan\delta\sin D}$$
$$Y = f\frac{\tan\delta\cos D - \cos(\alpha - A)\sin D}{\cos(\alpha - A)\cos D + \tan\delta\sin D},$$

where X and Y are physical coordinates on the focal plane, α and δ are the celestial coordinates (right accession and declination), A and D are the celestial coordinate of the image center and f is the focal length of the optics.

The transformation between the pixel coordinate and the physical coordinate on the focal plane ($\mathbf{X} = \mathrm{x2X}(\mathbf{x}; \theta)$) could be written as follows,

$$\begin{pmatrix} X \\ Y \end{pmatrix} = \begin{pmatrix} \cos\theta & -\sin\theta \\ \sin\theta & -\cos\theta \end{pmatrix}\begin{pmatrix} YSIZE(x - XCENTER) \\ XSIZE(y - YCENTER) \end{pmatrix},$$

where x and y are the pixel coordinates, $XSIZE$ and $YSIZE$ are the pixel sizes, $XCENTER$ and $YCENTER$ are the coordinates of the center of the frame and θ is the orientation angle of the frame.

The parameters, A,D,f and θ were determined in the following manner: (1) preparation of the coordinate of the stars — preparation of the pixel coordinates of the stars in the frame and preparation of the celestial coordinates of the GSC stars near the frame, (2) identification of the stars in each frame with the GSC stars and (3) determination of the precise transformation parameters.

The coordinates of stars were prepared as follows. The pixel coordinates of the bright 50 stars in the frame were obtained by DAOFIND/IRAF — a star finding program (Stetson 1987). The celestial coordinates of the bright 50 stars that were within 30 arcmin of the center of the frame were extracted from the GSC.

The identification of the stars was performed by pattern matching of the positions of the stars. The pattern matching was performed on the physical coordinate on the focal plane. The coordinates of the stars and the GSC stars were transformed into the physical coordinate on the focal plane using initial transformation parameters. The initial transformation parameters were reffered from a log in the FITS file. The identification for a given star k to a GSC source l was

evaluated by the matching function MatchScore(k,l) that was defined as follows,

$$\text{MatchScore}(k,l) \equiv \sum_{i=stars,j=gsc} \text{Score}(\mathbf{X}_i, \mathbf{R}_j - (\mathbf{R}_k - \mathbf{X}_l)),$$

where $\mathbf{X_i}$ is the physical coordinate of the star i on the focal plane, $\mathbf{R_j}$ is the physical coordinate of the reference star j on the focal plane and Score$(\mathbf{X},\mathbf{Y})$ is a non-negative, simply reducing function defined as follows,

$$\text{Score}(\mathbf{X},\mathbf{Y}) \equiv \frac{1}{1+(\mathbf{X}-\mathbf{Y})^2+(\mathbf{X}-\mathbf{Y})^4}.$$

If the star k and GSC source l is identical, the matching function becomes large relative to unity. If the star k and GSC source l is not identical, the matching function becomes close to unity. For a given star k in the frame, the GSC source L_k that had the largest value of MatchScore(k, L_k), was identified.

The precise transformation parameter were fitted by changing the parameters. The fitting was evaluated by the fitting function FitScore(f, A, D, θ) defined as follows,

$$\text{FitScore}(f, A, D, \theta) \equiv \sum_k \text{Score}(\mathbf{X}_k, \mathbf{R}_{L_k}(f, A, D, \theta)).$$

The parameter that maximized the fitting function was estimated to be the best fit parameter.

For the K band frames, the fitting was not succeeded because the appearance of the stars at the K band was different from that at the V band. For the K band frames, the J and H band sources were used for the reference.

3. Point source catalog

A point source catalog was compiled. The catalog covered $3° \times 6°$ area around the bar of the LMC. The $3° \times 6°$ area was covered with 6×12 sub-areas. Local catalogs of the point sources were compiled in each sub-area and they were combined into the point source catalog. The point source detection of the catalog was estimated to be complete up to 9.0 magnitude at the K' band. 1599 point sources were detected and position and magnitude at the J, H and K' band were measured for each source.

In this section, the criterion of source selection, the method of photometry and the method of identification of the detected sources among the different frames are described. The catalog, which consists of the position and magnitude of the sources is listed in the appendix.

3.1. Local catalog

As described in the previous section, the area of $3° \times 6°$ centered at $(5h20m, -69°30')$ was surveyed. The area was covered with sub-areas centered at the 6×12 grid points. Source selection

and photometry of the sources were performed on each sub-area and Local catalogs were compiled for each sub-area.

For convenience of the following discussions, these sub-areas were named as LMCxxyy (xx=02,03,..,07; yy=00,01,...12). "xx" represents the grid number along the direction of the right accession, "yy" represents the grid number along the direction of the declination.

Each sub-area was imaged twice at the J, H and K' bands. These frames were named as J1, J2, H1, H2, K1 and K2. For each sub-area, the six frames were aligned in position with respect to K1 frame.

The two frames — "1" and "2"— were combined into one frame named "ALL". For example, LMC0409K1 and LMC0409K2 were combined into LMC0409KALL. Source selection of each local catalog was performed on KALL frame. Photometry of the sources were performed on the six frames for each sub-area.

3.1.1. Source selection criterion

The sources in each sub-area were selected from KALL frame. The point source candidates were selected by DAOFINO/IRAF (Stetson 1987). The detection threshold was set to 4σ of typical back ground fluctuation above the sky level. Constant value of σ was used for all sub-area in order to set the threshold uniform for all sub-area.

In order to reject cosmic ray events and some other transient events, the correspondent point on the K1 and K2 frames were referred for each source candidate. The source candidate that had flux greater than 3σ of the fluctuation of back ground around the candidate were confirmed as a point source. The flux of the source candidate was measured by aperture photometry using PHOT program of IRAF. The confirmed sources were identified with local identify number and listed in the local catalog of the sub-area.

3.1.2. Photometry

The magnitudes of the sources were determined by relative measurements against standard stars using aperture photometry. For each source, the magnitudes were obtained in J1, J2, H1, H2, K1 and K2 frames.

The procedure was the following: (1) The signals of the sources were measured by aperture photometry. (2) The photometric system was defined by the standard stars. (3) The magnitudes of the sources were derived from the relative value of the signal to that of the standard stars.

aperture photometry The amount of the signal from a source was measured by aperture photometry. The observational signal of the source was measured in A/D conversion unit (ADU). The signal from the source ($Count$) was determined by measurement of the sum of the signal in a circular area around the source (aperture) as follows,

$$Count \equiv sum - BG \times S,$$

where sum is the total signal in the aperture, BG is the background level around the source and S is the area of the aperture. The diameter of the aperture was set to 4 pixels, which was twice as large as the full width of half maximum (FWHM) of the PSF. The background level was estimated from the median value of the background signal in the annular area around the source. The inner radius of the annulus was set to 10 pixels and the width of the annulus was set to 10 pixels. The aperture photometry was performed on the PHOT program of IRAF.

Definition of the photometric system The magnitude of an object in the photometric system is defined by standard stars as follows,

$$mag_{obj} \equiv mag_{std} - 2.5 \times \log_{10} \frac{Flux_{obj}}{Flux_{std}},$$

where $Flux_{obj}$ is the of the object, $Flux_{std}$ is the flux of the standard star, mag_{obj} is the magnitude of the object and mag_{std} is the magnitude of the standard star. I defined the photometric system by the A-type standard stars of Elias's faint standard stars (Elias et al. 1982). The magnitude was defined as same as CIT system (Elias et al. 1982) for the A-type stars. The name and the magnitude of the standard stars are listed in the table 3.

magnitude of the sources The magnitude was derived from observational values as follows,

$$\begin{aligned} mag_{obj} &= mag_{std} - 2.5 \times \log_{10} \frac{Flux_{obj} \times Response}{Flux_{std} \times Response} \\ &= mag_{std} - 2.5 \times \log_{10} \frac{Count_{obj}/T_{obj}}{Count_{std}/T_{std}} \\ &= maginst_{obj} + (mag_{std} - maginst_{std}) \\ &= maginst_{obj} + Zeropoint, \end{aligned}$$

where $Count$ and $Count_{std}$ are measurements of the flux in ADU of the star and the standard star obtained from the aperture photometry, $Zeropoint$ is the zero point of the photometric system and $maginst$ is the instrumental magnitude that is defined as follows,

$$maginst \equiv -2.5 \times \log_{10}(\frac{Count\ [ADU]/T[sec]}{1\ [ADU]/1\ [sec]}).$$

In order to compensate the effect of the atmospheric extinction, the magnitude of the stars were derived by the following equation,

$$mag_{obj} = maginst_{obj} + Zeropoint - Extinction \times Airmass,$$

where *Extinction* is the extinction coefficient term of the atmosphere. The *Zeropoint* and *Extinction* were determined by the observations of the standard stars. The values of *Zeropoint* and *Airmass* were tabulated in the table 4.

The transformation to the CIT/CTIO system was not determined because there were not enough observations of red standard stars. Ichikawa et al.(Ichikawa et al. 1995) gave the following transformations for the same system,

$$\begin{aligned} J_{CTIO} &= J - 0.012(J-H) \\ (J-H)_{CTIO} &= 0.94(J-H) \\ (J-K)_{CTIO} &= 1.07(J-K') \\ (H-K)_{CTIO} &= 1.04(H-K'). \end{aligned}$$

The effective wavelength and the flux of 0 magnitude star at each band were tabulated in table 7.

3.2. Compilation of the Local catalogs

The total catalog was compiled from the local catalogs. There could be multiple entries for an identical star among the local catalogs. The entries whose distance were less than 15 arc-seconds were identified as an identical star. The identified entries were registered by identification number (ID). The total catalog, which consisted of 1599 entries, is tabulated in table 1 in the appendix. The average position, the average magnitude, the standard error of the magnitude and the number of observations in J, H and K' band were tabulated in the table. In addition, the identification with GSC catalog is listed.

3.3. The accuracy of the magnitude and position, and completeness limit of the catalog.

3.3.1. Photometric accuracy

The standard error of multiple observations for a star was listed in the catalog. The standard error is calculated as follows,

$$\begin{aligned} \textit{standard error} &= s/\sqrt{n} \\ s^2 &= \frac{1}{n-1}\sum_i (mag_i - \overline{mag_i})^2, \end{aligned}$$

where n is the number of the observations for a star and mag_i is the magnitude of the star of the ith observation. In order to demonstrate the characteristic of the photometric error, the residuals of magnitudes of the multiple observations of each star among the different frames were plotted against the mean magnitude in figure 9.

3.3.2. Completeness of the catalog

The completeness limit of the catalog was estimated from the detection rate of previously known sources. Table 5 shows the detection rate of the source that have K band measurements in the Catalog of Infrared Observations (CIO; Gezari et al. 1994). The 81% of sources that had K magnitude $8.5 < m_{K_{cio}} < 9.0$ were detected by this survey. The 51% of sources that had K magnitude $9.0 < m_{K_{cio}} < 9.5$ were detected by this survey. Therefore, I estimated that the source detection was complete up to 9.0 magnitude at the K' band.

3.3.3. Positional Accuracy

In order to estimate the positional accuracy, the positions of the GSC star candidates were investigated. The identifications of the sources with the GSC stars were performed by the distance between the position of the sources and that of the GSC stars. The source that was within 30″ from a GSC star was identified as the GSC star. The residuals of position are plotted in Figure 8. The standard deviation of the residuals was 5.″8 in the right accession and 5.″5 in the declination. There are small number of the stars which show relatively large residuals in the position. These events were likely to be collisionally identified CSG stars. Thus, the positional accuracy of the catalog (3σ) was estimated to be 15″.

Name	J	H	K'	remark
HD205772	7.775	7.695	7.665	
HD2811	7.17	7.09	7.065	
HD19904	6.72	6.66	6.640	
HD38921	7.57	7.5365	7.535	
G158-27	8.305	7.755	7.430	1*
HD38150	8.166	7.901	7.870	2*

Table 3: The list of the standard stars
1*: M type standard star.
2*: F type standard star from Cater et al. 1995. Transformation from the Cater system to the CIT/CTIO system was given by Carter 1990.

Band	Zeropoint	Extinction coefficient
J	13.75 ± 0.19	0.25
H	11.76 ± 0.18	0
K'	10.32 ± 0.16	0

Table 4: Zero point and Extinction term

m_{kCIO}	number of CIO	detected CIO	detection rate
8.0 -8.25	7	7	100%
8.25-8.5	14	13	92%
8.5 -8.75	17	14	82%
8.75-9.0	16	13	81%
9.0 -9.25	14	7	50%
9.25-9.5	17	9	52%
9.5 -9.75	29	8	27%
9.75-10.0	22	5	22%
10.0-10.25	48	5	10%

Table 5: Detection rate of CIO sources

3.4. Characteristics of the sources

3.4.1. Infrared luminosity of the sources

Adopting the distance to the LMC to be 50 Kpc, the limiting magnitude $m_{K'} = 9.5$ is correspond to $M_k = -9$ if no interstellar extinction is there. The stars which can be seen are late type super giants, luminous red giants and luminous AGB stars. Main sequence star and giants are beyond the sensitivity. The luminosity of each type star are taken from the table 2 of Wainscoat et. al. 1992. There are 588 sources brighter than 8.5 magnitude at the K' band, which exceeded the the theoretical maximum of the luminosity of the AGB stars ($M_k = -10$). They are supposed to be M type red super giants if they are belonging to the LMC. The left of them are supposed to be luminous object such as intermediate mass M giants or AGB stars if they are belonging to the LMC.

3.4.2. Near infrared color of the sources

Figure 15 shows the NIR Color-Color diagram of the sources. There are small number of sources in the area where early-type main sequence stars are placed. It is consistent that the main sequence stars could not be seen with the limiting magnitude and that there are small number of foreground stars. There are a large number of stars in the area where late type star are placed. There are few sources which have $H - K < 0$ where normal stars are not placed.

4. Discussion

4.1. The distribution of RSGs in the LMC

The distribution of the luminous M giant star is a good indicator of star forming activity in recent $\sim 10^8$ years since the luminous M giant star spends $\sim 10^8$ years as the main sequence star. In contrast, the distribution of RSGs is a good indicator of star forming activity $10^6 \sim 10^7$ years ago since the RSG has $10^6 \sim 10^7$ years life time. The CO line emission flux from molecular cloud is a good indicator of ongoing star forming activity.

Figure 10 shows the distribution of the detected sources. Figure 11 shows the contour map of the number density of the detected sources. The thin lines in the figure 11 represent the surface number density contours of the sources ($m_{K'} > 8.5mag$). As discussed in the previous section, most of the sources whose K magnitudes are greater than 8.5 magnitude are likely to be luminous M giants or luminous AGB stars which has intermediate ($\sim 8M_{\odot}$) mass. In the following discussion, I assume that the distribution of the sources ($m_{K'} > 8.5mag$) represents the distribution of star forming activity for recent $\sim 10^8$ years. The thick lines in the figure 11 represent the surface number density contours of the sources ($m_{K'} < 8.5mag$). As discussed in

the previous section, most of the sources which are brighter than 8.5 magnitude in the K band are likely to be RSGs. In the following discussion, I assume that the distribution of the sources ($m_{K'} < 8.5mag$) represents the distribution of star forming activity $10^6 \sim 10^7$ years ago. Figure 13 shows the map of the CO intensity (Cohen et al.1988). In the following discussion, I assume that the figure represent distribution of ongoing star forming activity.

There are three distinct concentrations in the distribution of the sources ($m_{K'} > 8.5mag$): the region 1, the region 2 and the region 4 (Shapley V). There are also weak feature of the bar, large-scale feature Martin's B2 and B2' (see figure 14).

The distribution of the sources ($m_{K'} < 8.5mag$) is different from that of ($m_{K'} > 8.5mag$). There are four distinct concentrations: the region 1, the region 3 (Shapley II), the region 5 (Martin's B2) and the region 6 (Martin's B2'). The Shapley II appears and Martin's B2 and B2' become much distinct. The bar and the Shapley V become vague. The concentration in the region 1 is resolved into two parts (1a and 1b in figure 12). The feature 2 in the figure 12 disappears. The feature 1b and 3 become significant. The estimated density of the RSGs in the 1a, 1b and 3 region are tabulated in the table 6. In the calculations, I adopted spherical distribution of the RSGs in the regions. The radius of the sphere was estimated from the radius of the concentrated area. The area was defined by the first contour in the figure 12, which represent statistically significant level with a resolution of 100 pixels. The contamination of the foreground stars are estimated to be $12.9 \pm 5.8 \square^{\circ -1}$ from the number density of the stars of a control region. I selected a circular region in the survey area as the control region. The center of the circle was $5^h22^m20^s, -70^\circ32'26''$ (the bar south field). The radius of the circle was $21.'1$.

According to the table 2 of Wainscoat et.al 1992, the density of the M3-4 RSGs around the solar neighborhood is $12.5kpc^{-3}$. The densities of the RGSs in the region 1a, 1b and 3 are significantly greater than that of the solar neighborhood.

In Figure 13 (CO flux distribution), the feature changes dramatically. The most distinct feature is the concentration around $(5^h40^m, -70^\circ.3)$. There is a weak concentration around 30 Dor, but the all other features — the region 2 and 3 (Shapley II) in the figure 12 and the region 5 and 6 in the figure 12 (Martin's B2' and B2) — disappeared. The absence of the near infrared sources around the CO peak implies that (1) the star formation is not started, (2) the star formation has just started and there is no stars which becomes bright in the NIR wavelength yet or (3) stars are still embedded and no star could be observed with limiting magnitude 9.5

region	RSG density $[kpc^{-3}]$
1a	$6.3 \times 10^2 \pm 122$
1b	$7.8 \times 10^2 \pm 134$
3:Shapley II	$5.8 \times 10^2 \pm 120$

Table 6: RSG density of the region 1a, 1b, and 3

magnitude in the K' band. Deeper NIR survey is needed to solve this problem.

The only region that shows continuous star forming activity is the region at the south of 30 Dor (region 1a). There is no strong star forming activity around the bar in recent 10^8 years. The activity around the region 4 (Shapley V) was finished 10^7 years ago. The star formation around the region 3, 5 and 6 (Shapley II, B2' and B2) were active $10^6 \sim 10^7$ years ago, but it has been finished now. The star formation around CO peak has not been started or just started.

4.2. Comparison with IRAS Sources

In order to find dust enveloped objects, the point source catalog was compared with IRAS point source catalog (PSC). Sixty two IRAS sources coincided with the sources of the NIR catalog. In this section, source identification method, the nature of selected sources and the relationship between near infrared color and NIR-MIR color are discussed.

4.2.1. Source selection

Sixty two of 685 IRAS PSC sources in the area of our survey coincided with NIR sources. A source of NIR catalog was identified with a IRAS PSC source if the position of the NIR source was within the uncertainty circle of the IRAS source. The mean uncertainty in position of IRAS PSC is 24″ (Major axis).

The possibility of coincidence and expectation of total coincidence in accident was estimated to be 7.76×10^{-6} and 8.4, respectively, if there was not correlation between the NIR sources and IRAS sources. The possibility was estimated as follows,

$$P_{NIR} = \frac{S_{uncertainty\ circle\ of\ psc} \times N_{PSC}}{S_{survey}},$$

where $S_{uncertainty\ circle\ of\ psc}$ is the area of uncertainty circle of the IRAS PSC catalog, P_{PSC} is the number of PSC sources, S_{survey} is the area of the survey and P_{NIR} is the possibility for a NIR source to be coincidence with an IRAS source. The total number of coincidence is estimated as follows,

$$N_{coincidence} = P_{NIR} \times N_{NIR},$$

where N_{NIR} is the number of the sources and $N_{coincidence}$ is the total number of coincidence if there is not correlation between the NIR sources and IRAS sources. The number of the sources was approximately 1600. The surveyed area is 18□°.

Five of 62 IRAS sources were rejected in the following discussions because these had multiple counter parts in NIR or the S/N ratio in IRAS flux was poor.

4.2.2. The spectrum energy distribution from 1.25μm to 100μm

The spectrum energy distributions from 1.25μm to 100μm were compiled. Effective wave length, zero magnitude flux of the J, H, and K' band were referred from Astrophysical Quantities 4th edition (Tokunaga 1996) and tabulated in the table 7.

The sources were classified into two classes according to the the color temperature derived from flux density at the K' band and at the IRAS 12μm band.
(B): The sources whose color temperature was higher than 2000K.
(N): The sources whose color temperature was lower than 2000K.
If the flux density at IRAS 12μm band was below the detection limit of IRAS PSC, the flux density at IRAS 25μm band was used.

There were 23 sources in class B. Twenty of them were optically identified as the Galactic K and M type giants. One of them was optically identified as a Carbon star. Two of them had no optical counter parts in the SIMBAD data base, however, these sources were supposed to be normal stars because their SEDs were well fit by the black body radiation.

There were 35 sources in class N. The sources in class (N) were sub-classified into 3 classes according to their FIR-NIR flux ratio.
N0: The sources whose FIR flux density were lower than NIR flux density.
N1: The sources whose FIR flux density were as same as FIR flux density (Flat spectrum)
N2: The sources whose FIR flux density were higher than NIR flux density (FIR excess)
There were 4 sources in class N0, 17 sources in N1 and 14 sources in N2.

The class N0 objects had black body like spectrum in NIR and FIR region, severally, but the spectrum was discontinuous between NIR and FIR. These sources were likely to be variable stars. Actually, one of them was optically identified as variable star.

Band	effective wavelength [m]	Zero magnitude flux[$Wm^{-2}m^{-1}$]
J	1.215×10^{-6}	3.31×10^{-3}
H	1.654×10^{-6}	1.15×10^{-3}
K'	2.157×10^{-6}	4.30×10^{-4}

Table 7: Effective wavelength and zero magnitude flux
The values of zero magnitude flux at each band are based on Astrophysical Quantities 4th edition (Tokunaga 1996).

The SED of class N1 sources had distinctive feature: the flux density was flat from NIR to FIR region. It is possible to explain this distinctive spectrum if these sources are super giants associated with dust envelop in the LMC. Actually, there were 3 objects identified as M super giants, One as Be super giant and 2 objects as variable stars (LPVs). In this way, the left 11 sources were supposed to be candidates of dust enveloped super giants in the LMC.

The sources in class N2 were sub-classified into 3 classes according to their NIR color.
N2A: The sources whose NIR color were blue.
N2B: The sources whose NIR color were red.
N2C: The sources whose H flux density were lower compare to the J and K flux.
There were 3 of N2A, 5 of N2B and 6 of N2C.

Although the class N2A was selected by the blue NIR color, All 3 sources had large FIR flux. One source was identified as a planetary nebular and another was an emission line star. The left source was supposed to be such kind of hot star surrounded by dust shell.

The N2B class sources were selected by the extremely red color in the NIR wavelength. This extreme red color can be explained by two ways: (1) the heavy reddening by the thick dust shell and (2) large mount of emission from hot dust shell. In both way, such objects were supposed to be super giants with dust shells if the object were lying in the LMC. One of the 5 N2B sources was confirmed as a super giant with thick dust shell by the former observations.

The N2C objects were selected by the small flux in the H band compare to the flux at J and K band. The small H band flux of N2C object can be explained if they have hot dust envelop and have K band excess. Two of them were identified as Be super giant stars and one was as red super giant star.

Most of class B sources were normal K, M giants, in contrast, class Some of N sources were identified as bright source with dust envelope, like cocoon super giants, or planetary nebular. The left of N sources, therefore, were supposed to be object with dust envelop.

4.2.3. Near infrared 2 color diagram of the PSC sources

Figure 16 shows (J-H)v.s.(H-K) 2 color diagram. The line shows the extinction vector ($A_V = 10$). Many of class N sources were supposed to be heavy obscured by the dust, if they were blue or red super giants. This was consistent with the previous discussions that many of the class N sources were super giants with dust shell. Some of the class N sources had dust emissions but it was difficult to classify the dust emission object from (J-H)v.s.(H-K) 2 color diagram because the effect of extinction also explained the position of IRAS object in (J-H)v.s.(H-K) 2 color diagram.

5. Conclusions

The $3^\circ \times 6^\circ$ area of the LMC have been surveyed with angular resolution of 10."0 at the J, H and K' band. The limiting magnitudes (3σ) of the survey are 13.6, 11.9, and 10.0 magnitude at J, H and K' band, respectively. A point source catalog was compiled, which was supposed to be complete for the sources brighter than 9.0 magnitude at the K' band. 1599 point sources have been detected.

The JHK color-color diagram shows that most of the sources are not main sequence stars. Many of them are lying in the region where the luminous late type stars occupy in the diagram, but some of sources occupy where no normal star occupies. Some of these sources are identified with super giants with dust shell.

The main component of the sources is supposed to be red super giants (RSG) and late M type giants in the LMC. The density of the luminous M type giants and AGB candidates are concentrated in the region 2 in the figure 12. There is weak concentration around region 4 (the bar). The distribution of RSGs candidates strongly concentrate to the region 1 and 3 in the figure 12. The density of the RSGs candidates in region 1 and 3 are significantly greater than the density of the RSGs in the solar neighborhood. This shows there was strong star formation $10^6 \sim 10^7$ years ago. The difference of the distribution of the two components represents that the position of the active star forming region changed in recent $10^6 \sim 10^8$ year. The flux distribution of CO line has peak value at the east edge of the bar. The absence of K sources among the region shows that the star formation in the region has not started or are in the very early stage. There is no significant concentration around the bar in the distribution of RSG, luminous M giants, nor CO line emission. This shows that the star formation around the bar is quite at least in recent 10^8 years.

Cross-identification with IRAS PSC has been conducted. Although the sensitivity of my survey is higher than that of IRAS survey if the black-body spectrum is assumed, only 62 of 680 IRAS PSC sources coincided with the NIR sources. The SED from $1.25\mu m$ to $100\mu m$ of the identified sources have been compiled. The half of them are similar to that of black body and identified as Galactic foreground stars. The left of them show flat or redder spectrum. Some of these flat or red sources are confirmed as red super giants associated with the dust shell by the other authors.

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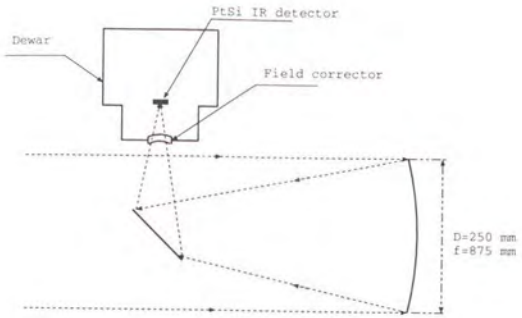

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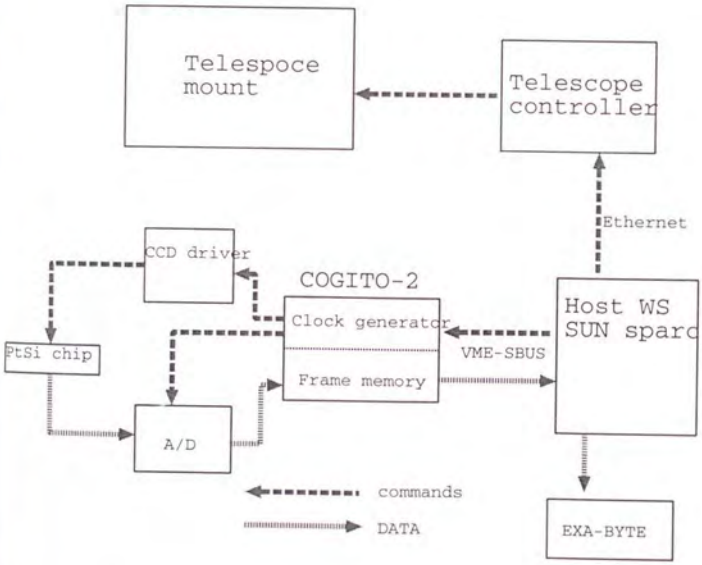


Fig. 1.— The schematic diagram of the observational system

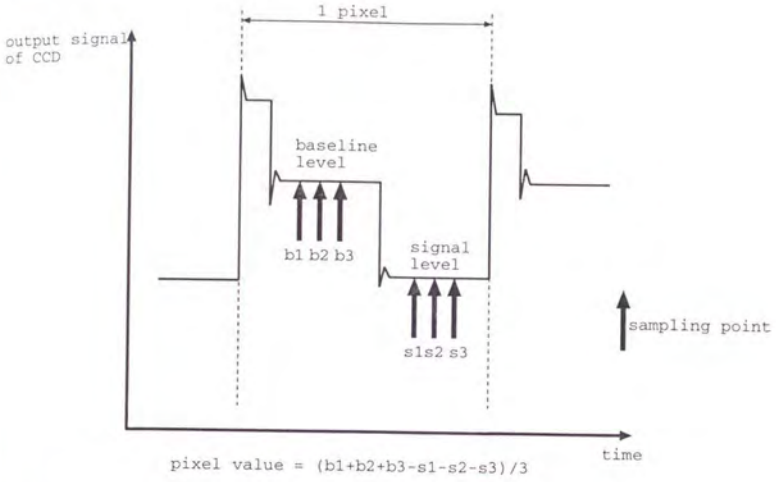


Fig. 2.— The schematic diagram of the correlated multi sampling.

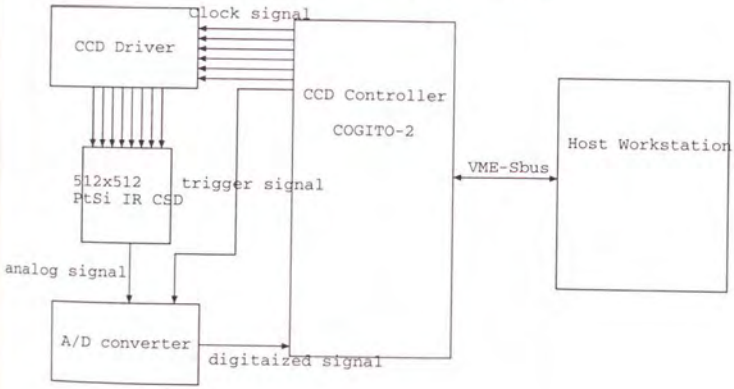


Fig. 3.— The schematic diagram of data aquision system

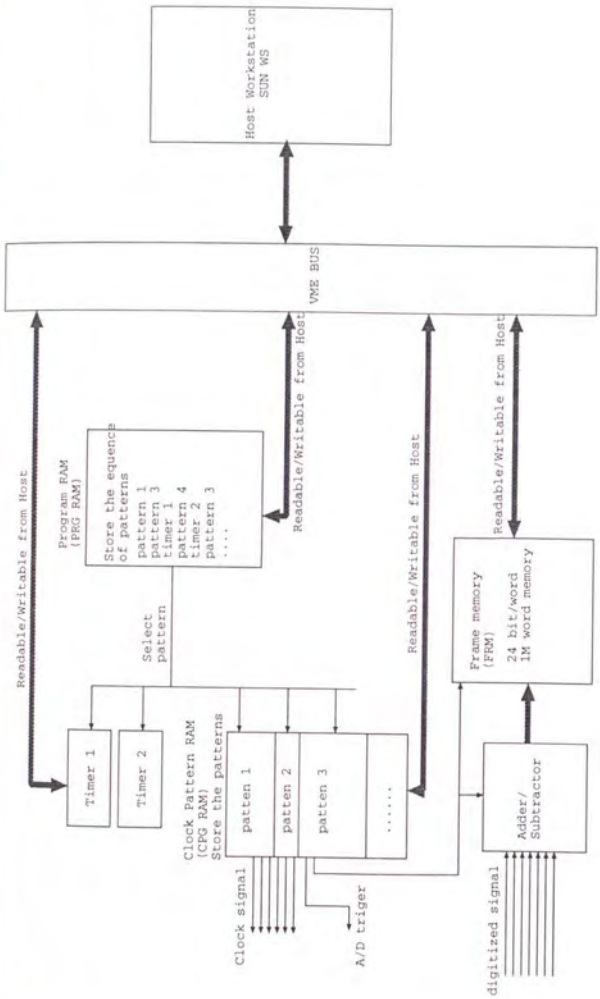


Fig. 4.— The schematic diagram of COGITO-2

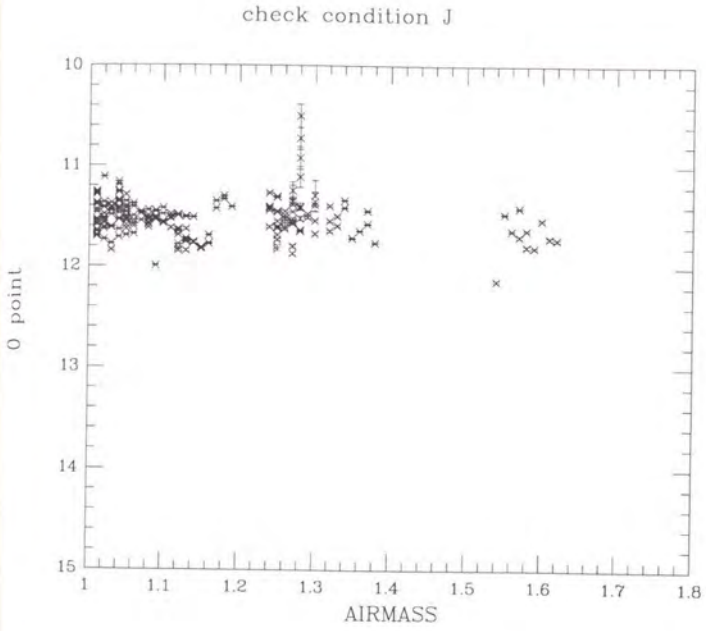


Fig. 5.— The results of the standard star observations in J band
The $mag - mag_{CIT}$ and *Airmass* is plotted for all standard observations. The total number of observation is 218. X axes is *Airmass*, and y axes is $mag - mag_{CIT}$ There is slight *Extinction* coefficient term. The standard deviation of the $mag - mag_{CIT}$ is 0.19.

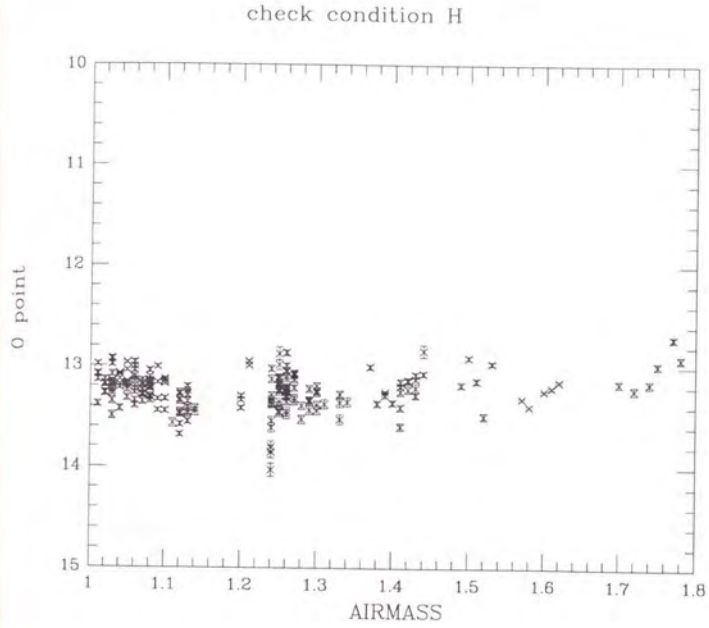


Fig. 6.— The results of the standard star observations in H band
The $mag - mag_{CIT}$ and *Airmass* is plotted for all standard observations. The total number of observation is 212. X axes is *Airmass*, and y axes is $mag - mag_{CIT}$ No clear *Extinction* coefficient term is there. The standard deviation of the $mag - mag_{CIT}$ is 0.18.

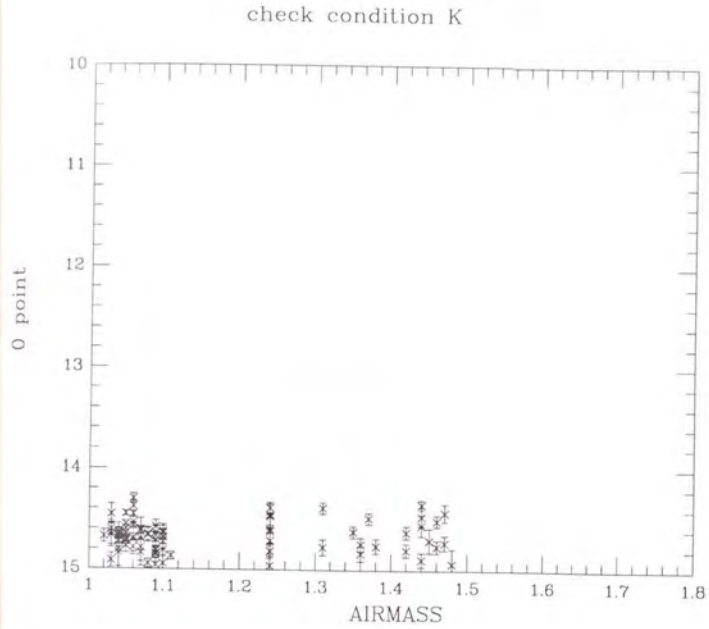


Fig. 7.— The results of the standard star observations in K' band
The $mag - mag_{CIT}$ and *Airmass* is plotted for all standard observations. The total number of observation is 88. X axes is *Airmass*, and y axes is $mag - mag_{CIT}$ No clear *Extinction* coefficient term is there. The standard deviation of the $mag - mag_{CIT}$ is 0.16.

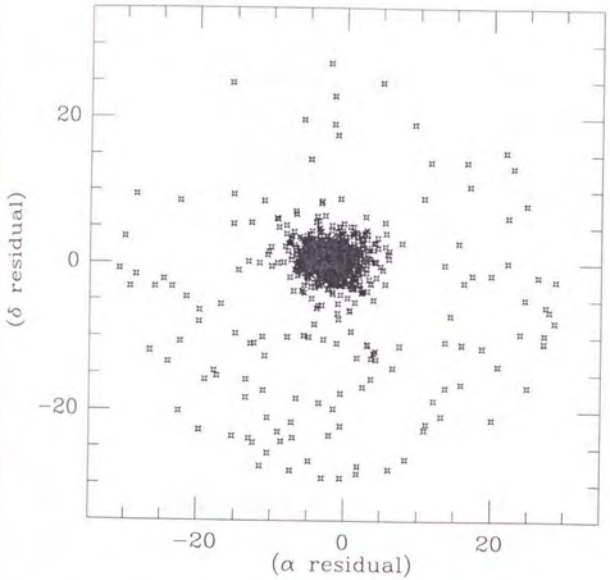


Fig. 8.— The redidual of GSC coordinate and coordinate of my catalog

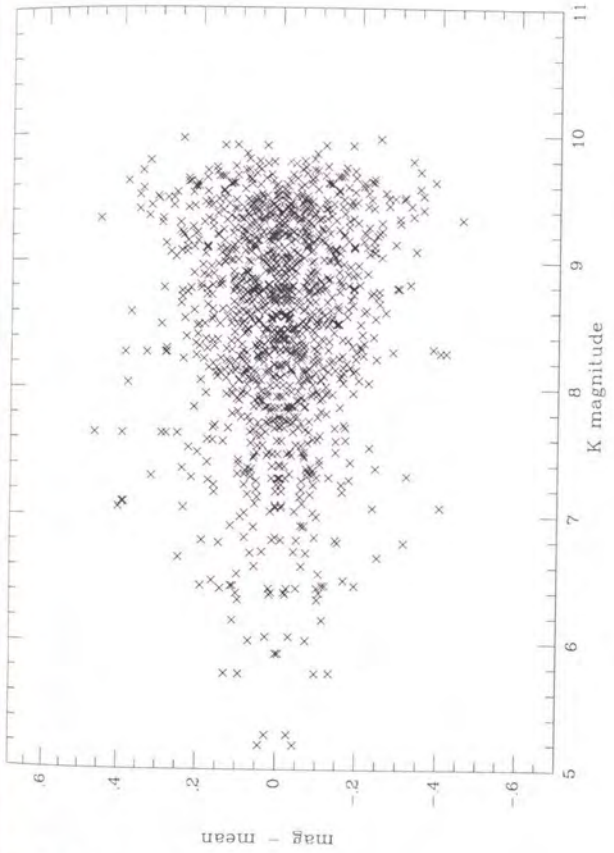


Fig. 9.— The residual of the magnitude
X axis is mean magnitude of the multiple observations of ith star. Y axis is the residual of the magnitude $mag_i - \overline{mag_i}$

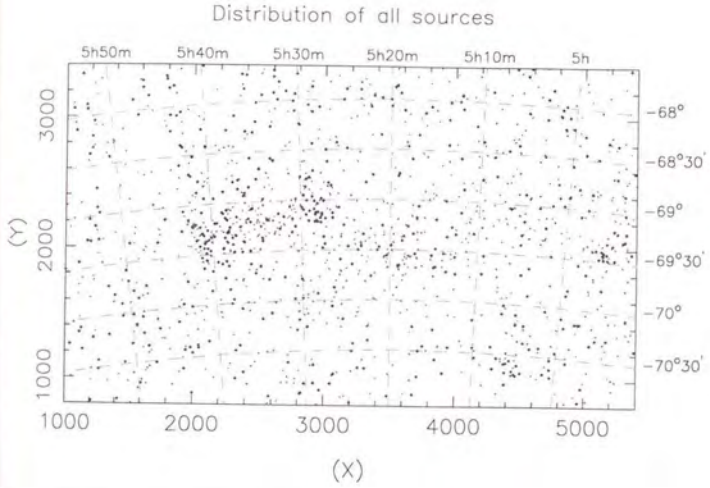


Fig. 10.— The distribution of the sources
The distribution of all source. The larger dots represent the sources ($m_k < 8.5$). The smaller dots represent the sources ($m_k > 8.5$).

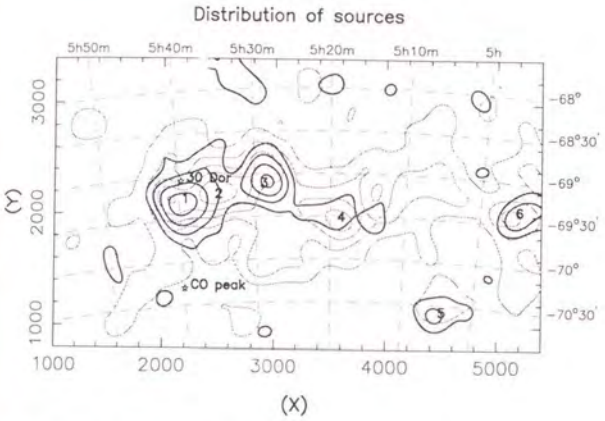


Fig. 11.— The distribution of the sources

The density contour map of the distribution of the sources. Thin lines represent the distribution of sources $m_K > 8.5$. Thick lines represent the distribution of sources $m_K < 8.5$. The distribution of the sources is smoothed by a gaussian, whose scale length is 100 pixel.

The first contour is 3^2 stars per the circular area whose the radius is twice of the scale length, which is statistically significant level. The second, and the third represent 4^2 and 5^2 stars per the area. The first, second and third contour represent 42, 74, and 116 stars per square degree, respectively.

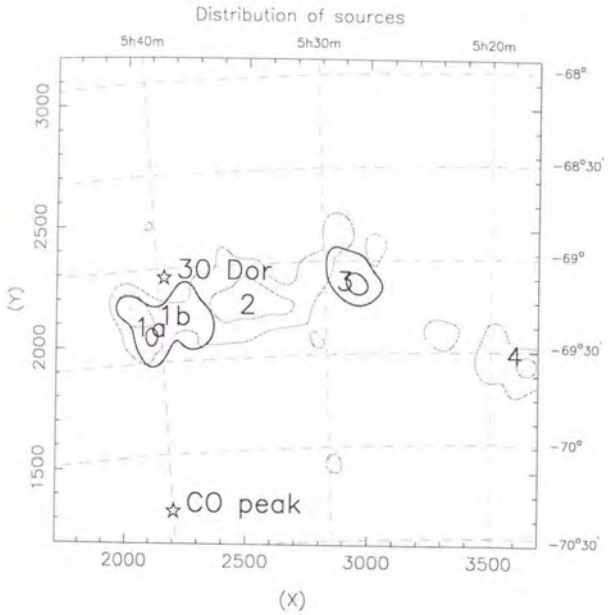


Fig. 12.— The distribution of the sources

The close up view of the distribution of the sources. Thin lines represent the distribution of sources $m_K > 8.5$. Thick lines represent the distribution of sources $m_K < 8.5$. The distribution of the sources is smoothed by a gaussian, whose scale length is 50 pixel.

The first contour is 3^2 stars per the circular area whose the radius is twice of the scale length, which is statistically significant level. The second, and the third represent 4^2 and 5^2 stars per the area. The first, second and third contour represent 168, 300, and 469 stars per square degree, respectively.

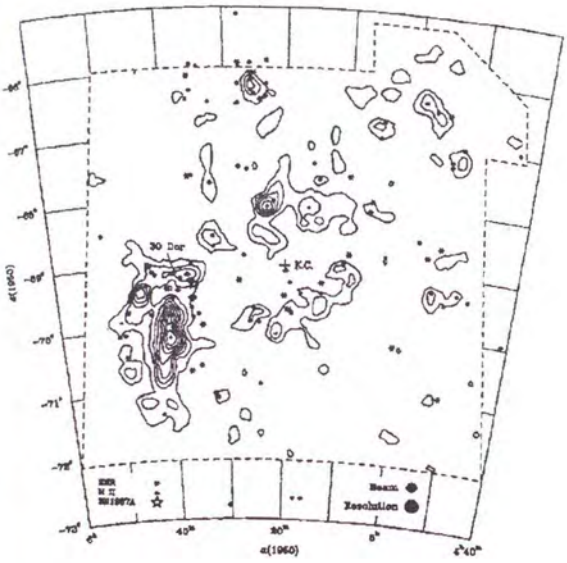


Fig. 13.— The distribution of CO line intensity
The map of velocity-integrated CO intensity in the LMC (Cohen et al. 1988).

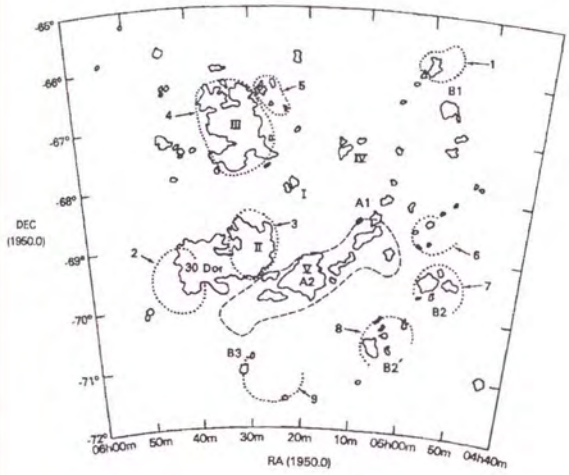


Fig. 14.— Large-scale feature of LMC.(Smith et.al.1987)
B1, B2, B2', B3, A1, and A2 are Martin's features. Roman numerals: The Shapley constellation I-V. Dashed contour: the Bar. Dotted contours: the supergiants shells from Meaburn. 1987

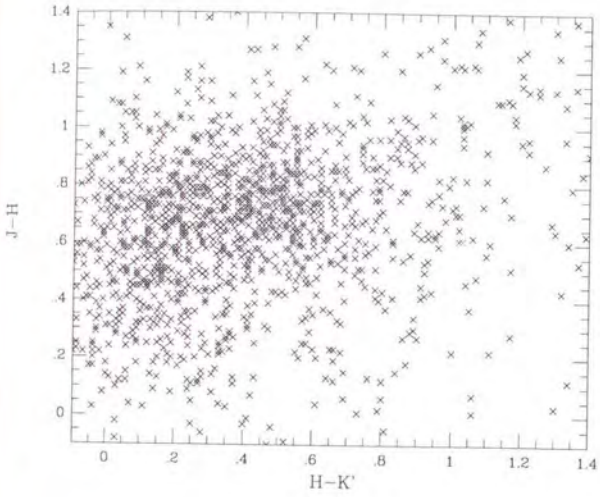


Fig. 15.— Infrared 2 Color diagram of the sources
The JHK color-color diagram of the sources. There is no feature of the main sequence stars. The source concentrate in the region where late type stars occupy.

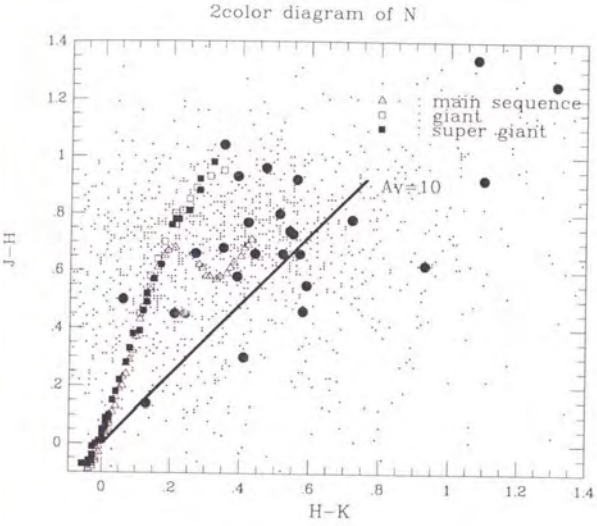


Fig. 16.— Infrared 2 Color diagram of the IRAS objects
The JHK color-color diagram of the IRAS objects. The large filled circles are the Class N object (see text). The thick line represents the extinction vector ($A_V = 10$). The data of main sequence stars, giants, and super giants taken from Koornneef 1983 are plotted.

Near infrared catalog

The point source catalog is tabulated in the table (1). Column 1 is the identification number. Column 2-7 are the celestial coordinate of the source. Column 8, 11 and 14 are the magnitude at J,H and K band, respectively. Column 9, 12 and 15 are the standard error of the magnitude measurements at J,H and K band, respectively. Column 10, 13 and 16 are the number of the measurements at J,H and K band, respectively. Column 17 is the identification of GSC (if exists).

The magnitude is given in the native system. Transformation to the CIT/CTIO is given in the text.

Table 1.

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
1	4	46	27	-68	38	49	9.36	0.00	2	9.03	0.05	2	8.62	0.04	2	9154.1187
2	4	46	28	-68	44	31	8.27	0.01	2	8.60	0.33	2	8.04	0.06	2	9154.816
3	4	46	37	-68	32	46	6.41	0.01	2	6.16	0.02	2	5.97	0.02	2	9154.1516
4	4	46	39	-68	7	20	8.41	0.00	2	7.56	0.01	2	7.29	0.01	2	9154.1620
5	4	46	41	-68	45	16	10.11	0.02	2	9.60	0.08	2	9.28	0.11	2	9154.1188
6	4	47	12	-69	5	12	9.19	0.01	2	8.59	0.01	2	8.26	0.06	2	9154.1883
7	4	47	18	-69	42	20	10.23	0.04	2	9.49	0.02	2	8.87	0.08	2	9154.2334
8	4	47	18	-69	18	29	9.40	0.01	2	8.73	0.02	2	8.40	0.06	4	9154.2350
9	4	47	18	-67	52	24	11.18	0.00	2	10.32	0.04	2	9.43	0.03	2	9154.204
10	4	47	29	-68	12	21	9.58	0.00	2	8.73	0.02	2	8.67	0.03	2	9154.574
11	4	47	40	-69	8	7	8.70	0.01	2	8.22	0.05	2	7.93	0.05	4	9154.1695
12	4	47	41	-70	8	32	8.09	0.00	2	7.55	0.03	2	7.31	0.04	2	9157.809
13	4	47	52	-69	11	3	10.51	0.01	2	9.79	0.07	2	9.27	0.06	4	9154.2085
14	4	47	58	-68	45	57	8.27	0.03	2	7.90	0.02	2	7.85	0.02	2	9154.2402
15	4	48	4	-69	35	18	10.28	0.01	2	9.39	0.08	2	9.42	0.14	2	9165.58
16	4	48	5	-68	59	50	9.80	0.02	2	9.15	0.00	2	8.98	0.19	2	9161.211
17	4	48	6	-68	45	56	9.90	0.01	2	9.77	0.05	2	9.34	0.06	2	9161.567
18	4	48	7	-69	22	31	9.45	0.07	4	8.55	0.01	4	8.16	0.07	4	9161.593
19	4	48	16	-68	57	48	8.76	0.01	2	8.09	0.05	2	7.88	0.04	2	9161.380
20	4	48	17	-71	4	20	8.53	0.02	2	8.00	0.01	2	8.03	0.04	2	9165.306
21	4	48	17	-69	57	11	9.07	0.02	2	8.30	0.00	2	8.12	0.01	2	9165.216
22	4	48	37	-71	1	8	9.02	0.01	2	8.71	0.04	2	8.71	0.01	2	9165.147
23	4	48	42	-70	53	56	8.21	0.01	2	7.57	0.00	2	7.40	0.00	2	9165.120
24	4	48	44	-67	38	39	11.26	0.01	2	10.05	0.04	2	9.34	0.15	2	
25	4	48	45	-67	49	7	10.68	0.00	2	9.77	0.02	2	9.03	0.14	2	9161.80
26	4	48	45	-69	43	24	9.89	0.05	2	9.18	0.00	2	8.84	0.04	2	9165.234
27	4	48	53	-68	37	9	9.75	0.02	2	9.18	0.04	2	8.92	0.07	2	9161.397
28	4	48	54	-70	15	31	6.42	0.04	2	5.69	0.03	2	5.51	0.04	2	9165.366
29	4	48	57	-67	42	49	7.73	0.01	2	7.28	0.03	2	7.30	0.01	2	9161.134
30	4	49	5	-67	47	12	9.34	0.01	2	8.28	0.04	2	7.83	0.02	2	9161.3
31	4	49	6	-69	21	46	11.92	0.03	2	10.79	0.04	2	9.57	0.09	2	
32	4	49	8	-69	6	30	10.63	0.02	2	10.05	0.02	4	9.33	0.09	4	
33	4	49	8	-68	57	31	10.50	0.00	2	10.05	0.12	2	9.14	0.15	2	9161.289
34	4	49	13	-67	58	9	10.09	0.01	2	9.37	0.00	2	9.10	0.06	2	9161.633
35	4	49	19	-69	53	15	12.21	0.04	2	10.73	0.02	2	8.93	0.06	2	
36	4	49	22	-69	11	29	9.55	0.12	4	9.02	0.02	4	9.05	0.04	4	9161.1360

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
37	4	49	22	-69	24	34	9.16	0.06	4	8.20	0.03	4	7.73	0.05	4	
38	4	49	26	-68	45	4	9.41	0.04	4	8.60	0.01	4	8.04	0.03	4	9161.438
39	4	49	41	-68	37	50	9.17	0.04	4	8.27	0.03	4	7.43	0.07	4	
40	4	49	43	-67	43	37	10.44	0.01	2	9.41	0.00	2	8.89	0.02	2	9161.153
41	4	49	43	-71	4	53	9.44	0.12	2	8.60	0.03	2	8.65	0.00	2	9165.298
42	4	49	46	-69	23	13	10.50	0.06	4	9.51	0.03	4	8.87	0.02	4	
43	4	49	49	-68	42	29	9.48	0.06	4	8.71	0.02	4	8.29	0.03	4	9161.245
44	4	49	50	-69	55	34	10.31	0.01	2	9.43	0.01	2	8.91	0.00	2	
45	4	50	3	-69	37	4	9.62	0.03	2	8.90	0.02	2	8.51	0.12	2	9165.953
46	4	50	5	-69	40	22	6.82	0.05	2	5.74	0.02	2	5.51	0.09	4	9165.960
47	4	50	5	-68	33	21	8.26	0.00	2	7.47	0.04	2	7.18	0.03	2	9161.394
48	4	50	6	-69	47	53	9.76	0.02	2	9.00	0.06	2	8.78	0.09	2	9165.919
49	4	50	8	-70	5	23	10.84	0.02	2	9.99	0.03	2	9.34	0.02	2	
50	4	50	10	-69	9	41	0.00	0.00	0	9.94	0.02	2	9.10	0.00	2	
51	4	50	10	-68	59	52	10.49	0.02	2	9.77	0.04	2	9.42	0.01	2	9161.1330
52	4	50	11	-68	46	48	15.82	1.36	2	14.60	0.27	2	9.23	0.22	2	
53	4	50	19	-67	59	11	8.87	0.01	2	7.83	0.01	2	7.51	0.01	2	9161.455
54	4	50	25	-69	31	31	8.66	0.02	2	8.09	0.03	2	7.76	0.00	2	9165.1027
55	4	50	30	-69	50	58	10.12	0.00	2	8.11	0.02	2	8.24	0.02	2	
56	4	50	31	-67	51	4	12.82	0.02	2	11.60	0.12	2	9.54	0.20	2	
57	4	50	38	-69	19	58	10.71	0.01	2	9.93	0.07	2	9.06	0.15	2	
58	4	50	40	-69	17	32	9.88	0.05	4	8.96	0.03	4	7.86	0.03	4	
59	4	50	43	-70	21	13	9.63	0.60	3	8.47	0.08	4	8.36	0.05	4	9165.240
60	4	50	45	-67	50	50	10.67	0.01	2	9.51	0.03	2	9.09	0.10	2	9161.41
61	4	50	52	-68	56	23	10.77	0.01	2	9.62	0.04	2	9.15	0.09	2	
62	4	50	52	-69	12	29	10.52	0.00	2	9.73	0.07	4	9.24	0.03	4	
63	4	50	58	-69	14	1	9.62	0.07	5	8.80	0.06	6	8.35	0.07	6	9161.1264
64	4	51	0	-69	34	33	9.88	0.03	2	9.48	0.04	2	9.29	0.06	2	9165.983
65	4	51	3	-69	47	47	9.01	0.05	4	8.45	0.05	4	8.54	0.15	4	9165.1093
66	4	51	5	-69	54	8	10.80	0.02	2	9.82	0.01	2	9.23	0.02	2	
67	4	51	20	-69	29	14	8.85	0.13	4	8.08	0.02	4	7.91	0.11	4	9165.910
68	4	51	21	-68	4	10	6.50	0.05	3	5.47	0.08	4	5.39	0.01	4	9161.635
69	4	51	21	-68	56	52	10.32	0.03	2	9.48	0.01	2	9.00	0.05	4	
70	4	51	24	-70	10	44	10.42	0.00	2	9.76	0.03	2	9.35	0.01	2	9165.1005
71	4	51	26	-68	26	25	7.20	0.03	2	6.60	0.01	2	6.48	0.04	2	9161.1290
72	4	51	26	-69	11	43	8.53	0.05	4	8.00	0.05	6	7.76	0.02	6	9161.1397

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
73	4	51	29	-68	57	50	11.89	0.05	2	10.64	0.00	2	9.33	0.08	2	
74	4	51	31	-69	14	51	9.53	0.08	4	8.75	0.06	6	8.28	0.04	6	
75	4	51	33	-70	14	39	9.77	0.00	2	9.30	0.02	2	9.28	0.08	2	9165.972
76	4	51	35	-69	32	34	10.04	0.02	2	9.24	0.00	2	8.92	0.05	4	9165.998
77	4	51	37	-68	5	44	6.52	0.03	2	5.25	0.05	4	4.82	0.06	4	9161.228
78	4	51	42	-68	2	35	9.90	0.02	4	9.10	0.03	4	8.86	0.05	4	9161.512
79	4	51	47	-69	19	25	9.81	0.05	6	9.00	0.07	6	8.62	0.03	6	
80	4	51	48	-69	19	2	9.25	0.04	6	8.42	0.06	6	7.92	0.06	6	
81	4	51	49	-68	51	32	9.89	0.02	2	9.40	0.02	2	9.34	0.02	2	9161.1298
82	4	51	51	-67	58	12	9.84	0.02	4	9.16	0.09	4	8.77	0.03	4	9161.468
83	4	51	57	-70	11	53	9.42	0.00	2	8.61	0.04	2	8.67	0.09	2	9165.1000
84	4	52	10	-70	3	57	8.66	0.00	2	8.35	0.01	2	8.35	0.06	2	9165.877
85	4	52	14	-69	2	39	10.69	0.02	2	10.02	0.03	2	9.31	0.09	4	
86	4	52	24	-69	24	10	8.11	0.01	2	7.93	0.02	2	7.84	0.04	4	9165.886
87	4	52	26	-68	34	42	10.48	0.07	4	9.84	0.03	4	8.91	0.06	4	
88	4	52	29	-69	39	43	10.82	0.02	2	9.90	0.03	2	9.35	0.07	2	
89	4	52	33	-70	23	55	9.20	0.03	2	9.00	0.05	2	8.85	0.06	2	9165.59
90	4	52	35	-70	40	45	9.90	0.01	2	8.99	0.03	2	8.62	0.07	2	9165.362
91	4	52	38	-69	46	14	0.00	0.00	0	0.00	0.00	0	8.95	0.00	2	9165.1095
92	4	52	40	-69	27	26	10.39	0.03	2	9.60	0.12	4	9.11	0.08	4	9165.1077
93	4	52	42	-69	2	3	14.28	0.35	2	12.42	0.19	2	8.83	0.31	2	
94	4	52	44	-68	42	41	10.31	0.00	2	10.25	0.02	2	9.45	0.08	2	9161.1294
95	4	52	51	-70	46	26	10.07	0.01	4	9.17	0.06	3	9.08	0.02	4	9165.157
96	4	52	55	-70	13	31	10.54	0.01	2	9.86	0.04	2	9.26	0.13	2	
97	4	52	56	-69	25	43	10.20	0.03	2	9.33	0.11	4	8.85	0.04	4	
98	4	52	56	-69	20	34	10.46	0.01	2	9.48	0.01	2	8.99	0.01	2	9161.1408
99	4	53	2	-68	35	44	8.96	0.01	2	8.56	0.02	2	8.27	0.01	2	9161.1280
100	4	53	4	-70	39	54	10.79	0.02	2	9.77	0.00	2	9.29	0.09	2	9165.453
101	4	53	12	-69	5	1	11.98	0.06	2	10.73	0.11	2	9.54	0.15	2	
102	4	53	14	-69	32	28	10.19	0.04	2	9.39	0.00	2	9.30	0.05	2	
103	4	53	15	-69	12	18	9.06	0.00	2	8.32	0.01	2	7.77	0.06	6	
104	4	53	18	-69	17	4	9.62	0.03	2	8.78	0.05	4	8.23	0.06	6	9161.1353
105	4	53	19	-67	50	47	9.73	0.06	4	9.42	0.10	4	9.27	0.05	4	9161.316
106	4	53	20	-70	6	7	9.75	0.01	2	9.25	0.06	2	9.16	0.08	2	9165.735
107	4	53	29	-70	38	41	10.05	0.04	2	9.25	0.03	2	9.24	0.04	2	9165.1019
108	4	53	31	-69	17	51	9.16	0.01	2	8.63	0.08	6	7.96	0.04	6	9161.1357

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
109	4	53	32	-69	1	17	8.18	0.07	4	7.49	0.09	4	7.21	0.04	6	9161.1289
110	4	53	37	-69	18	13	10.23	0.01	2	9.47	0.05	6	9.07	0.10	6	9161.1285
111	4	53	39	-68	40	54	9.36	0.09	3	8.75	0.02	2	8.64	0.09	4	9161.1389
112	4	53	43	-67	39	10	11.64	0.00	2	10.40	0.02	2	9.43	0.13	2	
113	4	53	43	-68	24	23	9.08	0.00	2	8.84	0.00	2	8.83	0.03	2	9161.1341
114	4	53	43	-67	31	55	9.83	0.01	2	9.21	0.00	1	8.75	0.01	2	9161.333
115	4	53	44	-68	57	59	11.00	0.09	4	10.44	0.05	4	9.34	0.04	4	
116	4	53	48	-68	52	39	9.75	0.04	6	8.98	0.05	4	8.70	0.10	6	9161.1383
117	4	53	49	-68	42	42	10.88	0.03	2	10.13	0.04	2	9.28	0.00	2	
118	4	53	51	-68	50	3	9.28	0.03	6	8.47	0.04	6	8.24	0.03	6	9161.1403
119	4	54	3	-67	29	39	9.95	0.00	2	9.18	0.01	2	8.92	0.08	2	8889.666
120	4	54	5	-69	5	31	10.09	0.01	2	9.45	0.04	2	8.90	0.06	6	9161.1348
121	4	54	7	-68	49	5	10.35	0.01	2	9.98	0.00	2	9.35	0.18	2	9161.1261
122	4	54	8	-70	6	28	9.65	0.05	4	8.89	0.01	4	8.73	0.03	4	
123	4	54	8	-68	32	31	9.78	0.02	2	9.11	0.03	2	8.74	0.13	2	9161.1332
124	4	54	9	-70	22	44	9.13	0.03	2	8.78	0.03	2	9.03	0.11	2	9165.651
125	4	54	12	-70	17	5	9.54	0.12	4	8.85	0.08	4	8.47	0.05	4	9165.948
126	4	54	14	-69	12	38	8.01	0.00	2	7.78	0.10	4	7.50	0.03	6	9161.778
127	4	54	15	-69	29	0	9.14	0.01	2	8.65	0.02	2	8.44	0.10	2	9165.808
128	4	54	17	-69	22	7	10.63	0.00	1	9.86	0.00	2	9.21	0.00	2	
129	4	54	21	-68	0	6	9.97	0.02	2	9.33	0.01	2	9.01	0.14	2	9161.347
130	4	54	24	-70	26	59	9.19	0.02	2	9.65	0.88	3	8.58	0.03	4	9165.728
131	4	54	26	-67	30	30	8.73	0.01	2	7.96	0.01	2	7.70	0.03	2	9161.1224
132	4	54	27	-70	2	6	8.98	0.02	4	8.66	0.06	4	8.56	0.05	4	9165.837
133	4	54	29	-68	17	58	9.18	0.03	2	8.89	0.01	2	9.03	0.05	2	9161.1317
134	4	54	30	-70	19	17	9.94	0.02	2	9.28	0.00	2	8.94	0.09	2	9165.654
135	4	54	35	-70	19	31	10.99	0.01	2	10.29	0.09	2	9.28	0.01	2	
136	4	54	37	-69	20	22	8.63	0.01	2	8.16	0.01	2	7.74	0.12	2	9161.956
137	4	54	38	-69	11	19	8.83	0.13	3	8.10	0.10	4	7.45	0.04	6	9161.1380
138	4	54	38	-68	57	37	10.67	0.03	2	10.14	0.10	2	9.22	0.06	2	9161.1161
139	4	54	40	-69	4	36	0.00	0.00	0	9.40	0.02	2	8.51	0.07	4	9161.944
140	4	54	42	-67	35	3	9.07	0.02	2	8.32	0.01	2	8.21	0.02	2	9161.1200
141	4	54	43	-69	21	32	10.47	0.03	4	9.81	0.06	4	9.34	0.16	4	
142	4	54	49	-69	30	2	9.63	0.02	2	9.13	0.01	2	8.60	0.13	2	9165.993
143	4	54	52	-68	40	7	7.97	0.08	4	7.40	0.05	4	7.20	0.04	4	9161.1240
144	4	54	54	-68	34	52	9.57	0.03	2	9.17	0.00	2	9.18	0.08	2	9161.1377

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
145	4	54	56	-69	27	4	10.92	0.01	4	10.09	0.18	4	9.09	0.11	4	
146	4	54	59	-69	34	44	10.73	0.02	2	10.17	0.00	2	9.29	0.11	2	
147	4	55	3	-69	29	11	8.68	0.04	4	8.22	0.19	4	7.64	0.08	4	9165.1085
148	4	55	3	-67	46	3	10.17	0.00	2	9.70	0.01	2	9.52	0.09	2	9161.1201
149	4	55	5	-69	35	25	10.90	0.02	2	10.28	0.00	2	9.72	0.28	2	
150	4	55	9	-69	55	39	0.00	0.00	0	11.19	0.00	1	9.27	0.01	2	
151	4	55	10	-68	20	30	9.66	0.02	4	8.32	0.03	4	7.24	0.10	4	
152	4	55	11	-69	25	47	9.03	0.05	4	8.56	0.12	4	8.35	0.07	4	9165.656
153	4	55	14	-69	15	21	9.60	0.09	4	9.04	0.07	4	8.72	0.10	4	9161.880
154	4	55	14	-68	50	29	11.59	0.07	4	10.50	0.04	4	9.33	0.05	4	
155	4	55	16	-69	19	13	8.67	0.04	4	7.94	0.09	4	7.34	0.09	4	9161.854
156	4	55	16	-68	40	8	10.78	0.01	2	9.99	0.00	2	9.49	0.04	2	
157	4	55	19	-68	51	51	11.09	0.01	2	10.22	0.02	2	9.43	0.16	2	
158	4	55	20	-68	22	39	11.99	0.10	2	10.24	0.05	2	8.81	0.04	2	
159	4	55	22	-69	47	14	9.22	0.11	4	8.45	0.03	4	8.03	0.12	4	
160	4	55	25	-69	38	38	9.96	0.01	2	9.41	0.02	2	8.72	0.15	2	9165.946
161	4	55	28	-70	14	40	8.96	0.01	2	8.74	0.02	2	8.81	0.02	2	9165.794
162	4	55	31	-70	17	35	8.56	0.00	2	8.18	0.00	2	8.36	0.08	4	9165.591
163	4	55	30	-69	29	9	8.49	0.03	4	8.03	0.10	4	7.68	0.05	4	9165.915
164	4	55	33	-69	57	50	9.21	0.06	3	8.90	0.02	3	8.87	0.15	4	9165.866
165	4	55	33	-69	25	0	10.04	0.03	4	9.06	0.10	4	8.38	0.06	4	
166	4	55	35	-69	26	54	8.39	0.03	4	7.89	0.08	4	7.44	0.04	4	9165.821
167	4	55	36	-69	27	58	10.34	0.01	4	9.59	0.04	4	9.06	0.07	4	
168	4	55	41	-69	26	23	8.59	0.07	4	8.26	0.15	4	7.69	0.04	4	9165.644
169	4	55	45	-69	21	12	10.52	0.05	2	9.55	0.06	2	9.11	0.08	2	
170	4	55	48	-69	24	5	9.04	0.06	4	8.49	0.08	4	8.10	0.04	4	9165.1047
171	4	55	52	-70	54	9	9.49	0.01	2	8.79	0.02	2	8.68	0.03	2	9165.971
172	4	55	56	-68	16	2	9.54	0.03	4	8.91	0.04	4	8.87	0.03	4	9161.742
173	4	55	58	-68	20	3	10.66	0.05	2	9.84	0.00	2	9.35	0.27	2	
174	4	56	0	-70	10	23	10.22	0.00	2	9.58	0.03	2	9.09	0.09	2	
175	4	56	2	-69	28	50	9.69	0.04	4	9.11	0.10	4	8.48	0.08	4	9165.507
176	4	56	4	-70	36	57	9.00	0.08	4	8.48	0.03	4	8.55	0.06	4	9165.811
177	4	56	6	-70	20	42	8.75	0.43	3	7.75	0.10	4	7.71	0.08	4	9165.833
178	4	56	10	-68	23	38	9.76	0.03	2	9.38	0.04	2	9.27	0.03	2	9161.781
179	4	56	11	-69	19	33	10.53	0.03	2	9.98	0.02	2	9.15	0.13	2	
180	4	56	13	-68	19	24	6.86	0.05	4	6.26	0.08	4	6.45	0.11	4	9161.1009

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
181	4	56	24	-69	42	7	9.44	0.03	2	9.07	0.01	2	8.72	0.07	4	9165.515
182	4	56	23	-70	43	32	10.50	0.04	2	9.83	0.00	2	9.31	0.13	2	
183	4	56	26	-69	24	30	10.38	0.05	4	9.68	0.04	4	9.09	0.09	4	
184	4	56	26	-69	23	53	9.33	0.02	4	8.67	0.07	4	8.48	0.08	4	9165.523
185	4	56	26	-69	24	11	9.38	0.01	4	8.80	0.10	4	8.59	0.06	4	9165.765
186	4	56	27	-69	40	38	9.55	0.02	2	9.02	0.02	2	8.50	0.17	2	9165.1088
187	4	56	34	-67	51	57	10.93	0.01	2	9.92	0.06	2	9.33	0.07	2	
188	4	56	34	-68	49	41	9.08	0.08	4	8.85	0.02	4	8.68	0.03	4	9161.1142
189	4	56	37	-70	46	56	6.98	0.01	2	6.34	0.02	2	6.28	0.01	2	9165.885
190	4	56	46	-69	24	52	10.51	0.01	2	9.57	0.03	2	9.27	0.09	2	9165.509
191	4	56	48	-69	50	22	10.28	0.00	2	9.85	0.01	2	9.05	0.00	2	9165.859
192	4	56	50	-69	48	29	9.87	0.05	2	9.08	0.01	2	8.80	0.08	2	9165.605
193	4	56	50	-70	55	29	0.00	0.00	0	5.31	0.00	1	4.91	0.01	2	9165.986
194	4	56	52	-70	3	3	10.83	0.01	2	10.04	0.02	2	9.25	0.02	2	
195	4	56	53	-68	50	59	12.04	0.02	2	10.95	0.00	2	9.43	0.07	2	
196	4	56	54	-69	33	15	10.06	0.00	2	9.65	0.02	2	8.87	0.09	2	9165.672
197	4	56	56	-69	24	6	10.03	0.05	4	9.43	0.13	4	8.87	0.10	4	9165.966
198	4	56	59	-68	48	7	10.23	0.08	4	9.45	0.04	4	9.35	0.08	4	
199	4	57	1	-69	17	41	10.79	0.06	2	9.88	0.09	2	9.44	0.02	2	
200	4	57	7	-68	29	40	8.73	0.05	3	8.22	0.09	4	8.05	0.02	4	9161.851
201	4	57	9	-69	2	43	0.00	0.00	0	0.00	0.00	0	9.47	0.12	2	
202	4	57	13	-68	1	36	9.49	0.05	4	8.77	0.10	4	8.74	0.09	4	9161.837
203	4	57	14	-67	34	49	9.45	0.03	2	9.28	0.01	2	9.32	0.04	2	9161.1045
204	4	57	20	-69	38	50	8.91	0.03	2	8.80	0.01	2	8.43	0.07	2	9165.712
205	4	57	24	-70	52	13	10.08	0.01	2	9.11	0.03	2	8.86	0.10	2	
206	4	57	25	-68	50	32	7.10	0.11	4	6.66	0.07	2	6.59	0.05	4	9161.940
207	4	57	26	-68	53	37	10.16	0.07	2	9.25	0.04	2	9.02	0.12	2	9161.820
208	4	57	29	-70	27	29	10.31	0.10	4	9.55	0.05	4	9.05	0.06	4	
209	4	57	30	-69	21	38	10.14	0.05	2	9.43	0.02	2	9.31	0.02	2	9161.1258
210	4	57	31	-70	9	0	9.12	0.07	2	8.15	0.04	2	7.88	0.01	2	9165.746
211	4	57	42	-69	0	6	7.04	0.03	3	6.42	0.13	3	6.09	0.07	6	9161.1098
212	4	57	43	-70	8	51	8.54	0.01	2	7.81	0.02	2	7.26	0.04	2	
213	4	57	44	-69	30	34	9.59	0.06	2	9.34	0.01	2	8.77	0.08	4	
214	4	57	52	-70	14	2	10.10	0.06	2	9.17	0.06	2	9.23	0.05	2	9165.616
215	4	57	54	-69	23	55	9.82	0.04	2	9.34	0.01	2	8.97	0.06	4	
216	4	57	54	-69	22	43	10.27	0.03	2	9.66	0.01	2	8.93	0.21	2	

Table 1—Continued

ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
217	4	58	3	-69	4	5	10.78	0.03	4	9.97	0.05	4	9.35	0.06	4	
218	4	58	7	-70	8	58	7.66	0.02	2	7.25	0.01	2	7.51	0.02	2	9165.592
219	4	58	20	-69	33	39	8.97	0.03	3	8.62	0.05	4	8.27	0.09	4	9165.797
220	4	58	25	-67	55	31	11.81	0.02	2	10.66	0.11	2	9.46	0.09	2	
221	4	58	27	-70	23	47	9.80	0.18	3	9.35	0.11	4	9.25	0.10	4	9165.678
222	4	58	26	-69	4	25	8.33	0.06	4	8.11	0.07	4	8.13	0.07	6	9161.1080
223	4	58	27	-70	56	49	9.70	0.02	2	9.02	0.06	2	9.33	0.03	2	9165.1012
224	4	58	28	-69	15	31	9.78	0.16	4	9.31	0.08	6	8.91	0.06	6	
225	4	58	31	-68	27	26	8.64	0.03	4	8.09	0.09	4	7.92	0.06	4	9161.924
226	4	58	36	-67	33	40	0.00	0.00	0	0.00	0.00	0	8.29	0.07	2	
227	4	58	44	-68	50	55	9.46	0.05	6	8.91	0.09	4	8.78	0.10	6	9161.725
228	4	58	46	-70	32	38	8.79	0.15	4	8.33	0.01	4	8.36	0.09	4	9165.849
229	4	58	49	-70	29	30	11.07	0.02	2	9.87	0.05	2	9.22	0.17	2	
230	4	58	49	-68	16	26	8.83	0.04	6	8.37	0.09	6	8.26	0.07	6	9161.743
231	4	58	55	-71	9	44	8.65	0.01	2	8.18	0.02	2	8.68	0.11	2	9165.389
232	4	58	56	-68	48	4	8.34	0.04	6	7.64	0.06	6	7.34	0.03	6	9161.1174
233	4	58	58	-67	49	16	11.20	0.01	2	10.27	0.08	2	9.40	0.05	2	
234	4	59	7	-67	44	39	9.34	0.02	2	8.74	0.00	2	8.66	0.07	2	9161.1061
235	4	59	11	-69	28	57	9.13	0.04	2	9.31	0.02	2	8.93	0.07	2	9165.806
236	4	59	17	-69	49	9	0.00	0.00	0	0.00	0.00	0	8.04	0.00	2	9165.782
237	4	59	22	-70	11	44	8.97	0.02	4	8.27	0.02	4	7.85	0.05	4	9165.568
238	4	59	23	-68	14	37	9.32	0.02	4	8.85	0.02	4	8.92	0.09	4	9161.829
239	4	59	25	-68	21	55	10.16	0.01	2	9.41	0.05	2	9.03	0.03	2	9161.1274
240	4	59	26	-69	52	30	0.00	0.00	0	7.76	0.00	1	7.68	0.01	2	9165.505
241	4	59	29	-68	4	44	10.36	0.02	2	9.46	0.02	2	9.15	0.01	2	9161.708
242	4	59	34	-68	46	24	9.88	0.04	6	9.20	0.03	6	8.76	0.04	6	9161.689
243	4	59	37	-70	51	28	9.25	0.03	4	8.95	0.08	4	8.98	0.02	4	9165.1092
244	4	59	39	-69	17	43	9.73	0.03	2	9.61	0.08	6	9.34	0.07	6	9161.1077
245	4	59	43	-70	6	37	8.49	0.05	4	8.05	0.08	4	7.93	0.05	4	9165.554
246	4	59	50	-68	52	39	9.73	0.04	2	9.89	0.12	2	9.18	0.07	2	9161.791
247	4	59	52	-68	34	57	7.67	0.11	4	7.50	0.02	2	7.55	0.11	4	9161.1057
248	4	59	57	-68	53	39	7.60	0.11	6	7.02	0.02	6	6.97	0.05	6	9161.972
249	4	59	57	-67	48	13	10.09	0.03	2	9.46	0.04	2	9.08	0.05	2	9161.1212
250	5	0	5	-68	12	39	7.13	0.03	4	6.24	0.02	4	5.89	0.01	4	9161.963
251	5	0	6	-69	35	46	10.20	0.02	2	9.79	0.10	2	8.96	0.04	2	
252	5	0	11	-70	27	7	7.04	0.04	2	6.30	0.14	3	5.91	0.01	4	9165.754

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
253	5	0	11	-70	13	10	11.36	0.02	2	10.69	0.05	2	9.40	0.08	2	
254	5	0	13	-67	58	2	10.27	0.01	2	9.49	0.05	2	9.31	0.03	2	9161.1214
255	5	0	21	-68	12	33	9.89	0.01	2	9.43	0.07	2	9.24	0.11	2	9161.982
256	5	0	27	-68	58	48	8.88	0.01	2	8.39	0.06	2	8.26	0.10	4	9161.933
257	5	0	28	-69	21	0	8.77	0.01	4	8.85	0.12	4	8.82	0.11	4	9161.1172
258	5	0	32	-70	41	54	7.31	0.03	4	6.70	0.02	4	6.61	0.03	4	9165.559
259	5	0	37	-69	15	0	10.92	0.02	2	10.24	0.10	2	9.49	0.06	2	
260	5	0	39	-70	22	57	10.04	0.00	2	9.24	0.03	2	9.03	0.08	2	9165.524
261	5	0	40	-70	37	24	7.11	0.03	4	6.80	0.04	4	6.91	0.03	4	9165.777
262	5	0	41	-68	6	4	9.19	0.02	4	8.35	0.02	4	7.90	0.02	4	9161.822
263	5	0	45	-70	31	39	8.57	0.07	6	7.83	0.02	6	7.83	0.07	6	9165.775
264	5	0	48	-70	29	55	10.65	0.00	1	9.98	0.00	2	9.52	0.08	2	9165.871
265	5	0	54	-68	16	29	10.52	0.01	2	9.66	0.00	2	9.37	0.04	2	
266	5	0	58	-68	13	50	10.45	0.00	2	9.50	0.01	2	9.05	0.05	2	
267	5	1	3	-68	54	22	9.47	0.05	4	8.91	0.07	4	8.37	0.12	6	
268	5	1	3	-68	12	59	8.92	0.03	4	8.33	0.05	4	8.22	0.06	4	9161.753
269	5	1	9	-67	59	25	8.51	0.03	2	7.88	0.05	2	7.89	0.10	2	9161.1041
270	5	1	13	-71	7	42	8.77	0.01	2	8.13	0.03	2	8.28	0.02	2	9165.918
271	5	1	14	-70	35	45	11.51	0.03	2	10.30	0.04	2	9.23	0.09	2	
272	5	1	19	-68	46	13	8.78	0.09	4	8.33	0.05	4	8.18	0.08	4	9161.703
273	5	1	23	-69	9	9	9.61	0.03	2	9.20	0.06	2	9.25	0.12	2	9161.869
274	5	1	24	-70	5	54	10.28	0.01	2	9.38	0.01	2	8.69	0.05	2	
275	5	1	24	-69	47	10	10.41	0.00	2	9.38	0.02	2	8.92	0.07	2	9165.880
276	5	1	27	-70	40	23	8.28	0.02	4	7.60	0.07	4	7.45	0.02	4	9165.508
277	5	1	29	-68	42	44	10.54	0.04	4	10.13	0.05	4	9.22	0.06	4	9161.1371
278	5	1	32	-68	1	45	0.00	0.00	0	0.00	0.00	0	3.60	0.01	2	9161.1031
279	5	1	34	-68	5	55	7.26	0.51	3	5.89	0.44	4	4.53	0.07	4	
280	5	1	34	-69	29	45	7.54	0.01	4	7.58	0.14	4	7.74	0.06	4	9165.609
281	5	1	35	-68	35	34	10.07	0.03	2	9.29	0.07	2	8.88	0.00	2	
282	5	1	44	-68	5	5	9.66	0.06	4	9.44	0.73	4	8.76	0.07	4	9161.1141
283	5	1	44	-70	2	55	8.69	0.02	2	8.36	0.03	2	8.25	0.05	2	9165.824
284	5	1	47	-68	59	18	6.41	0.10	2	5.20	0.04	2	5.11	0.07	6	9161.1085
285	5	1	46	-69	6	54	10.75	0.01	2	10.13	0.05	2	9.22	0.07	2	
286	5	2	8	-70	43	36	9.98	0.00	2	9.36	0.01	2	9.09	0.06	2	9165.664
287	5	2	10	-70	25	0	9.59	0.15	4	8.72	0.02	4	8.35	0.03	4	9165.687
288	5	2	9	-70	27	20	9.70	0.01	2	9.32	0.08	2	8.91	0.15	2	9165.743

Table 1—Continued

ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
289	5	2	12	-67	59	8	10.34	0.01	2	9.47	0.02	2	9.43	0.10	2	9161.983
290	5	2	21	-69	19	0	11.40	0.09	2	10.64	0.03	2	9.49	0.15	2	
291	5	2	21	-69	57	42	11.42	0.03	2	10.38	0.00	2	9.36	0.12	2	
292	5	2	22	-68	46	6	10.70	0.04	2	9.94	0.04	2	9.40	0.08	2	9161.1035
293	5	2	24	-69	7	2	10.64	0.00	2	10.04	0.04	2	9.50	0.17	2	9161.755
294	5	2	25	-69	13	5	8.24	0.06	4	7.82	0.10	6	7.64	0.06	6	9161.1128
295	5	2	25	-69	20	3	9.69	0.00	2	9.78	0.11	2	9.26	0.15	2	9161.935
296	5	2	41	-67	50	35	6.94	0.05	4	6.26	0.04	2	6.06	0.04	4	9161.999
297	5	2	42	-69	20	26	9.92	0.01	2	9.95	0.11	2	9.55	0.10	2	9161.986
298	5	2	48	-70	41	49	9.65	0.02	2	9.27	0.02	2	9.38	0.07	2	9165.545
299	5	2	53	-69	22	50	11.63	0.02	2	10.61	0.00	2	9.43	0.10	2	
300	5	3	3	-68	30	39	7.91	0.06	4	7.64	0.09	4	7.58	0.01	4	9161.1027
301	5	3	5	-68	8	9	9.15	0.11	2	8.16	0.03	2	7.80	0.03	2	9161.866
302	5	3	10	-68	29	18	13.48	0.15	2	12.01	0.28	2	8.87	0.08	2	
303	5	3	10	-67	56	15	8.47	0.05	4	7.64	0.07	4	7.33	0.08	4	9161.1014
304	5	3	14	-70	25	56	8.41	0.08	4	7.74	0.08	4	7.60	0.08	4	9165.582
305	5	3	13	-69	1	20	9.19	0.05	4	9.12	0.83	4	8.06	0.07	6	9161.1017
306	5	3	14	-68	20	14	9.86	0.01	2	9.13	0.08	4	8.79	0.06	4	9161.1362
307	5	3	15	-70	17	43	9.79	0.06	2	8.95	0.00	2	8.61	0.05	2	9165.709
308	5	3	18	-69	8	9	11.86	0.09	2	11.14	0.07	2	9.41	0.00	2	
309	5	3	20	-68	54	1	10.29	0.03	2	9.46	0.01	2	9.26	0.06	2	9161.950
310	5	3	24	-67	37	51	9.40	0.02	2	8.83	0.02	2	9.23	0.06	4	9161.1066
311	5	3	28	-70	22	32	12.48	1.54	2	12.37	0.20	2	9.16	0.00	1	
312	5	3	36	-68	33	38	11.28	0.03	2	10.33	0.04	2	9.46	0.06	2	
313	5	3	42	-69	14	44	0.00	0.00	0	9.78	0.05	2	9.35	0.07	2	9161.835
314	5	3	55	-67	54	39	9.68	0.00	2	9.38	0.08	2	9.29	0.05	2	9161.802
315	5	3	56	-69	54	26	9.09	0.04	2	8.41	0.05	2	8.22	0.05	2	9165.658
316	5	4	0	-69	38	14	9.12	0.14	4	8.97	0.04	4	8.13	0.04	4	
317	5	4	4	-70	22	47	9.24	0.10	5	8.52	0.07	6	8.26	0.05	6	9165.815
318	5	4	8	-70	40	50	7.40	0.08	4	6.76	0.07	4	7.06	0.22	4	9165.771
319	5	4	8	-70	14	26	10.42	0.08	2	9.63	0.02	2	9.37	0.14	2	9165.762
320	5	4	9	-70	12	21	9.39	0.06	2	8.51	0.09	2	8.38	0.03	2	9165.1081
321	5	4	10	-67	32	45	9.02	0.00	1	0.00	0.00	0	8.10	0.00	2	9161.779
322	5	4	13	-69	20	6	0.00	0.00	0	0.00	0.00	0	9.27	0.01	2	
323	5	4	14	-69	13	42	10.84	0.01	2	10.16	0.04	2	9.38	0.01	2	
324	5	4	18	-68	55	35	10.16	0.03	4	9.49	0.11	4	9.31	0.07	4	9161.872

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
325	5	4	23	-68	56	24	10.39	0.04	2	9.88	0.06	2	9.31	0.05	2	9161.1147
326	5	4	28	-67	49	5	10.54	0.08	2	9.42	0.03	2	9.22	0.05	2	9161.885
327	5	4	37	-70	36	20	7.85	0.14	4	7.23	0.05	4	7.54	0.14	4	9165.804
328	5	4	42	-70	42	39	9.25	0.00	2	8.53	0.03	2	8.00	0.02	2	9165.701
329	5	4	44	-70	29	22	9.63	0.08	4	9.04	0.03	4	9.09	0.03	4	9165.556
330	5	4	44	-70	21	43	10.41	0.05	2	9.43	0.03	2	8.94	0.11	2	
331	5	4	49	-68	7	15	9.96	0.10	2	9.19	0.00	2	9.17	0.02	2	9161.1131
332	5	4	51	-69	5	6	10.35	0.11	4	9.79	0.11	4	9.34	0.05	6	
333	5	4	51	-70	9	39	10.17	0.02	2	9.55	0.06	2	9.25	0.03	2	9165.618
334	5	4	51	-69	42	15	8.21	0.01	2	8.46	0.07	2	8.13	0.02	2	9165.541
335	5	4	52	-68	54	0	6.69	0.13	5	5.64	0.04	4	5.57	0.03	6	9161.761
336	5	4	52	-70	41	59	9.35	0.01	2	8.38	0.01	2	7.80	0.01	2	9165.938
337	5	4	53	-69	10	5	7.80	0.04	2	7.35	0.05	2	7.26	0.12	6	9161.1022
338	5	4	54	-69	17	41	0.00	0.00	0	0.00	0.00	0	9.42	0.08	2	9161.978
339	5	4	54	-70	33	19	9.71	0.01	2	8.76	0.01	2	8.71	0.06	2	9165.760
340	5	4	57	-68	54	5	11.22	0.31	4	9.94	0.03	2	9.01	0.03	4	
341	5	4	58	-70	37	41	10.25	0.01	2	9.25	0.02	2	9.16	0.06	2	
342	5	5	3	-69	18	30	9.49	0.01	2	9.07	0.09	6	8.46	0.01	6	
343	5	5	6	-69	24	13	9.19	0.04	6	8.88	0.09	6	8.47	0.07	6	
344	5	5	6	-68	5	12	8.03	0.06	4	7.94	0.04	4	8.05	0.04	4	9161.1021
345	5	5	6	-70	11	56	8.67	0.07	4	8.16	0.06	4	8.01	0.02	4	9165.729
346	5	5	7	-70	6	15	9.38	0.06	4	8.77	0.09	4	8.17	0.04	4	9165.647
347	5	5	9	-67	38	31	9.07	0.06	6	8.25	0.01	6	8.06	0.06	6	9161.1037
348	5	5	10	-70	40	5	9.66	0.00	2	8.69	0.05	2	8.39	0.00	2	9165.543
349	5	5	13	-70	42	25	9.95	0.02	2	9.15	0.05	2	8.95	0.03	2	9165.994
350	5	5	22	-70	18	25	10.88	0.07	2	9.91	0.00	2	9.37	0.01	2	
351	5	5	27	-67	43	12	9.29	0.13	2	8.60	0.04	2	8.44	0.06	2	9161.1103
352	5	5	27	-69	6	44	11.29	0.07	2	10.27	0.07	2	9.24	0.11	2	
353	5	5	30	-68	15	23	9.49	0.08	4	9.08	0.02	4	9.14	0.03	4	9161.1138
354	5	5	34	-70	33	49	9.10	0.02	2	8.17	0.03	2	7.78	0.01	2	
355	5	5	38	-68	54	2	10.66	0.02	4	9.85	0.03	4	9.44	0.04	4	
356	5	5	42	-68	41	23	9.90	0.05	4	9.08	0.09	4	8.69	0.03	4	9161.1393
357	5	5	47	-68	29	11	11.16	0.04	2	10.54	0.03	2	9.48	0.16	2	
358	5	5	49	-69	13	47	11.64	0.01	2	11.03	0.10	2	9.34	0.09	2	
359	5	5	49	-69	53	11	0.00	0.00	0	0.00	0.00	0	9.38	0.04	2	9165.660
360	5	5	50	-68	18	26	10.10	0.00	2	9.58	0.03	2	9.18	0.02	2	9161.1053

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
361	5	5	53	-71	4	32	7.60	0.01	2	7.02	0.02	2	7.07	0.01	2	9165.1087
362	5	5	55	-67	53	10	8.93	0.14	2	8.64	0.01	2	8.80	0.02	2	9161.825
363	5	5	57	-70	35	27	9.41	0.00	2	8.47	0.03	2	8.33	0.04	2	
364	5	5	59	-70	29	15	9.72	0.08	4	8.94	0.01	4	8.70	0.07	4	
365	5	5	58	-68	24	59	7.21	0.04	2	6.76	0.01	2	6.75	0.02	2	9161.824
366	5	5	59	-70	32	8	9.66	0.01	2	9.18	0.01	2	8.93	0.12	2	9165.675
367	5	5	59	-70	48	8	9.21	0.02	4	8.56	0.09	4	8.02	0.05	4	9165.756
368	5	6	1	-69	25	42	10.07	0.03	4	9.88	0.12	4	9.22	0.06	4	9165.522
369	5	6	1	-70	40	52	7.11	0.01	4	6.23	0.09	4	6.04	0.01	4	9165.831
370	5	6	2	-69	2	10	11.83	0.02	2	10.53	0.01	2	9.46	0.07	2	
371	5	6	4	-70	16	55	10.58	0.06	4	9.38	0.03	4	8.65	0.03	4	
372	5	6	8	-67	31	36	8.18	0.16	2	7.45	0.01	2	7.30	0.03	2	9161.913
373	5	6	8	-68	20	57	10.78	0.02	2	10.19	0.05	2	9.23	0.08	2	
374	5	6	8	-68	38	46	11.56	0.02	2	10.64	0.02	2	9.42	0.15	2	
375	5	6	10	-67	41	51	10.57	0.14	2	9.67	0.05	2	9.26	0.09	2	9161.1112
376	5	6	11	-69	2	27	11.14	0.00	2	10.63	0.09	2	9.46	0.05	2	
377	5	6	12	-70	36	1	7.84	0.04	4	7.12	0.02	4	7.05	0.01	4	9165.872
378	5	6	13	-69	35	42	11.36	0.01	2	10.73	0.04	2	9.34	0.13	2	
379	5	6	20	-69	56	9	9.32	0.01	3	8.77	0.05	4	8.66	0.03	4	9165.668
380	5	6	23	-70	2	35	9.71	0.01	2	9.32	0.01	2	9.35	0.00	2	9165.601
381	5	6	24	-69	3	0	8.82	0.03	2	8.46	0.00	2	8.42	0.03	4	9161.1197
382	5	6	25	-68	23	15	10.34	0.03	2	9.74	0.02	2	9.05	0.17	2	9161.1390
383	5	6	28	-68	12	2	10.97	0.21	2	10.04	0.12	2	9.30	0.01	2	
384	5	6	30	-68	43	11	11.09	0.04	2	10.37	0.07	2	9.37	0.04	2	
385	5	6	37	-70	32	42	9.90	0.07	6	9.09	0.04	6	8.71	0.05	6	
386	5	6	36	-68	47	16	11.11	0.06	4	10.29	0.09	4	9.19	0.10	4	
387	5	6	36	-70	34	16	10.62	0.03	4	9.79	0.06	4	9.19	0.06	4	
388	5	6	37	-70	0	57	9.51	0.02	4	8.82	0.08	4	8.42	0.08	4	9165.749
389	5	6	38	-67	39	31	8.27	0.14	2	7.34	0.03	2	6.95	0.00	2	9161.1117
390	5	6	39	-68	21	29	10.04	0.04	2	9.25	0.06	2	9.03	0.10	2	
391	5	6	40	-69	2	25	10.92	0.03	2	10.31	0.12	2	9.28	0.01	2	
392	5	6	44	-69	31	21	9.29	0.02	2	9.17	0.10	2	8.51	0.01	2	9165.576
393	5	6	46	-70	6	0	7.60	0.03	4	7.00	0.03	4	6.96	0.03	4	9165.650
394	5	6	46	-69	11	58	13.34	0.00	1	11.34	0.07	2	9.58	0.08	2	
395	5	6	51	-70	53	46	9.46	0.00	2	8.77	0.07	2	8.91	0.14	2	9165.1083
396	5	6	52	-67	36	5	9.55	0.10	2	8.74	0.03	2	8.88	0.06	2	9161.730

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
397	5	6	54	-69	56	30	0.00	0.00	0	10.04	0.00	1	9.41	0.04	2	
398	5	6	57	-69	8	56	10.73	0.01	2	10.18	0.05	2	9.46	0.14	2	9161.1024
399	5	7	0	-68	28	34	8.68	0.04	2	7.89	0.05	2	7.89	0.03	2	9161.1186
400	5	7	2	-68	47	52	10.00	0.03	4	9.21	0.04	4	8.82	0.04	4	
401	5	7	6	-70	32	41	8.39	0.04	6	7.55	0.05	6	7.23	0.05	6	9165.674
402	5	7	9	-68	58	49	11.67	0.05	2	10.71	0.07	2	9.49	0.14	2	
403	5	7	9	-67	55	3	9.30	0.09	2	8.48	0.02	2	8.53	0.02	2	9161.706
404	5	7	18	-69	23	11	10.79	0.03	2	10.31	0.03	2	9.24	0.08	2	
405	5	7	24	-69	50	24	9.93	0.02	2	9.21	0.00	2	9.00	0.01	2	9165.624
406	5	7	27	-71	7	48	9.29	0.02	2	9.00	0.05	2	9.29	0.09	2	9165.917
407	5	7	28	-69	52	43	11.07	0.01	2	10.21	0.07	2	9.32	0.03	2	
408	5	7	33	-70	39	2	9.23	0.10	4	8.41	0.07	4	7.92	0.05	4	9165.757
409	5	7	38	-69	44	6	10.53	0.00	2	10.41	0.03	2	9.07	0.12	2	
410	5	7	45	-69	39	31	10.56	0.04	2	10.34	0.05	2	9.23	0.01	2	9165.602
411	5	7	46	-69	9	56	10.85	0.02	2	10.82	0.06	2	9.52	0.04	2	9161.952
412	5	7	46	-68	29	29	10.19	0.05	2	9.43	0.07	2	9.06	0.02	2	9161.1195
413	5	7	48	-68	54	58	11.88	0.06	2	10.74	0.03	2	9.49	0.07	2	
414	5	7	53	-70	26	2	9.68	0.11	4	8.82	0.08	4	8.48	0.07	4	9165.723
415	5	8	8	-68	3	32	11.41	0.08	2	10.15	0.03	2	9.25	0.23	2	9161.1178
416	5	8	12	-68	44	12	8.43	0.02	6	8.04	0.06	6	7.94	0.03	6	9161.875
417	5	8	19	-69	1	29	10.29	0.04	2	9.65	0.00	2	9.30	0.16	2	
418	5	8	20	-69	13	38	10.36	0.01	2	9.60	0.05	2	9.26	0.04	2	
419	5	8	24	-68	28	34	8.85	0.04	4	8.57	0.11	4	8.54	0.01	4	9161.1187
420	5	8	32	-68	32	50	9.01	0.05	4	8.43	0.10	4	8.37	0.04	4	9161.991
421	5	8	39	-67	39	23	9.49	0.15	2	8.82	0.05	2	8.81	0.07	4	9161.699
422	5	8	40	-68	12	6	10.01	0.03	2	9.02	0.00	2	8.87	0.03	2	9161.782
423	5	8	43	-70	49	15	10.00	0.02	2	9.40	0.05	2	9.35	0.03	2	9165.822
424	5	9	3	-67	53	44	8.20	0.11	4	7.49	0.12	4	7.27	0.04	4	9161.1115
425	5	9	5	-70	37	2	9.20	0.09	4	8.63	0.06	4	8.51	0.05	4	9165.812
426	5	9	4	-69	21	17	10.29	0.02	2	10.28	0.06	2	9.55	0.01	2	9161.720
427	5	9	8	-70	7	25	9.40	0.01	2	8.89	0.05	2	8.84	0.01	2	9165.630
428	5	9	10	-69	36	12	9.23	0.02	2	9.33	0.05	4	8.86	0.13	4	9165.795
429	5	9	16	-69	32	6	7.33	0.04	2	6.89	0.05	2	6.34	0.02	4	9165.661
430	5	9	25	-69	42	52	7.54	0.02	4	7.60	0.05	4	7.32	0.05	4	9165.649
431	5	9	26	-69	9	35	8.86	0.08	4	8.83	0.05	4	8.87	0.03	6	9161.746
432	5	9	27	-68	58	37	9.48	0.05	4	8.97	0.07	4	8.79	0.04	4	9161.1189

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
433	5	9	27	-68	31	41	9.96	0.04	4	9.14	0.08	4	8.88	0.09	4	9161.1114
434	5	9	28	-68	47	51	10.82	0.06	2	10.09	0.03	2	9.64	0.12	2	
435	5	9	35	-69	15	0	9.47	0.18	4	9.36	0.15	6	9.11	0.12	6	9161.864
436	5	9	36	-69	4	55	10.63	0.01	2	9.90	0.06	2	9.39	0.03	2	
437	5	9	42	-68	26	10	9.11	0.02	4	8.54	0.07	4	8.52	0.06	4	9161.1013
438	5	9	44	-68	46	38	9.13	0.03	4	8.55	0.03	4	8.16	0.05	4	9161.1343
439	5	9	48	-70	33	7	8.06	0.05	4	7.32	0.02	4	7.39	0.07	4	9165.832
440	5	9	49	-70	28	44	10.04	0.07	4	9.25	0.09	4	9.04	0.08	4	9165.882
441	5	9	48	-67	52	8	9.33	0.01	2	8.81	0.03	2	8.54	0.12	2	9161.914
442	5	9	51	-68	23	53	13.91	0.14	2	13.31	0.18	2	8.26	0.38	2	
443	5	9	59	-70	24	55	9.68	0.10	6	9.04	0.07	6	8.70	0.07	6	9165.598
444	5	10	6	-70	27	3	7.64	0.06	6	6.90	0.04	6	6.79	0.07	6	9165.692
445	5	10	15	-70	10	42	6.92	0.04	2	6.06	0.03	2	5.75	0.05	2	9165.778
446	5	10	17	-68	39	15	10.55	0.02	2	9.94	0.05	2	9.11	0.08	2	
447	5	10	17	-69	2	6	9.78	0.04	4	9.34	0.03	4	9.05	0.06	4	9161.953
448	5	10	19	-68	32	34	9.78	0.04	2	9.39	0.00	2	8.92	0.10	2	9161.723
449	5	10	21	-69	5	19	10.49	0.02	2	9.89	0.03	2	9.06	0.07	2	9161.1153
450	5	10	27	-68	53	9	10.31	0.05	4	9.71	0.09	4	8.60	0.05	4	9161.1299
451	5	10	30	-69	19	10	6.94	0.02	2	6.51	0.17	4	6.00	0.05	6	9161.1179
452	5	10	30	-68	23	30	9.56	0.13	4	9.11	0.02	2	8.87	0.07	4	9161.903
453	5	10	30	-67	45	8	11.90	0.04	2	10.75	0.08	2	9.30	0.01	2	
454	5	10	39	-68	14	52	8.26	0.06	6	7.55	0.05	6	7.52	0.07	6	9161.900
455	5	10	47	-69	45	1	9.14	0.01	2	9.18	0.10	2	8.70	0.15	2	9165.803
456	5	10	54	-69	10	11	0.00	0.00	0	0.00	0.00	0	9.30	0.05	2	9161.834
457	5	10	55	-68	48	50	9.75	0.03	6	8.98	0.02	6	8.76	0.03	6	9161.911
458	5	10	59	-69	12	15	10.09	0.03	2	9.50	0.04	2	9.33	0.03	2	9161.718
459	5	11	1	-69	38	16	10.03	0.01	2	9.88	0.12	2	9.19	0.07	2	9165.623
460	5	11	2	-67	57	23	10.40	0.05	2	9.35	0.05	2	9.27	0.07	2	9161.729
461	5	11	2	-69	34	19	9.67	0.02	2	9.28	0.03	2	8.85	0.04	2	9165.745
462	5	11	4	-69	18	48	10.33	0.01	2	9.84	0.09	6	9.12	0.06	6	
463	5	11	4	-69	12	2	11.41	0.02	2	10.37	0.05	2	9.51	0.07	2	
464	5	11	4	-71	10	1	7.85	0.02	2	7.25	0.03	2	7.61	0.02	2	9165.1045
465	5	11	6	-69	24	14	10.99	0.01	2	10.53	0.11	2	9.49	0.09	2	
466	5	11	9	-70	42	3	9.52	0.01	2	8.79	0.08	2	8.60	0.04	2	9165.786
467	5	11	18	-69	30	8	9.94	0.03	2	9.47	0.08	2	8.92	0.09	2	9165.817
468	5	11	23	-70	26	5	9.31	0.19	3	9.13	0.04	4	9.13	0.12	4	9165.685

Table 1—Continued

ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
469	5	11	25	-69	12	48	10.96	0.03	2	10.06	0.02	2	9.29	0.07	2	
470	5	11	25	-69	22	7	12.04	0.00	1	11.33	0.01	2	9.27	0.00	2	
471	5	11	36	-69	3	15	0.00	0.00	0	0.00	0.00	0	8.98	0.08	2	
472	5	11	37	-70	23	26	9.17	0.02	4	8.99	0.02	4	9.18	0.04	4	9165.665
473	5	11	48	-68	52	53	9.18	0.06	4	8.54	0.03	4	8.42	0.03	4	9161.1030
474	5	11	48	-69	24	19	10.65	0.05	2	10.01	0.01	2	9.12	0.09	2	
475	5	11	54	-68	49	2	11.53	0.01	2	10.78	0.10	2	9.18	0.12	2	
476	5	11	58	-67	58	24	12.64	0.05	2	12.27	0.10	2	9.05	0.34	2	
477	5	12	2	-69	7	3	0.00	0.00	0	8.63	0.09	2	7.90	0.08	2	9162.129
478	5	12	13	-68	4	55	8.72	0.12	4	7.80	0.01	2	7.57	0.08	4	9162.241
479	5	12	13	-68	34	31	8.64	0.02	2	8.17	0.01	2	8.03	0.05	2	9162.108
480	5	12	20	-70	9	21	10.80	0.01	2	10.14	0.04	2	9.42	0.05	2	
481	5	12	23	-67	56	33	0.00	0.00	0	0.00	0.00	0	6.16	0.02	2	
482	5	12	24	-67	56	53	7.27	0.02	2	6.28	0.00	2	6.16	0.03	4	9162.110
483	5	12	24	-68	57	18	11.43	0.03	2	10.96	0.09	2	9.21	0.05	2	
484	5	12	28	-69	43	47	8.44	0.05	2	8.14	0.08	2	7.67	0.06	2	9166.506
485	5	12	28	-69	31	5	10.33	0.01	2	9.82	0.12	2	9.09	0.00	2	
486	5	12	32	-69	19	59	9.64	0.09	4	8.87	0.13	4	8.28	0.01	4	9162.1
487	5	12	34	-69	17	13	9.94	0.03	2	9.51	0.13	2	8.57	0.03	2	9162.257
488	5	12	35	-68	0	22	8.41	0.01	4	7.54	0.05	3	7.46	0.04	4	9162.690
489	5	12	35	-69	52	41	9.92	0.01	2	9.39	0.02	2	9.37	0.09	2	9166.40
490	5	12	36	-69	33	40	7.71	0.01	2	7.34	0.09	2	6.53	0.01	2	9166.427
491	5	12	46	-68	26	11	9.25	0.04	2	9.27	0.01	2	9.24	0.04	2	9162.685
492	5	12	46	-71	7	2	9.15	0.00	2	8.81	0.01	2	9.35	0.07	2	9166.901
493	5	12	53	-67	44	36	9.69	0.03	2	9.41	0.05	2	9.13	0.15	2	9162.92
494	5	12	58	-71	3	31	6.79	0.00	1	6.05	0.03	2	5.93	0.02	2	9166.899
495	5	13	2	-70	27	41	9.35	0.07	4	8.61	0.10	3	8.37	0.04	4	9166.390
496	5	13	1	-69	34	43	9.97	0.00	2	9.55	0.10	2	8.63	0.14	2	9166.634
497	5	13	3	-69	15	48	11.53	0.04	2	10.76	0.04	2	8.11	0.35	2	
498	5	13	5	-69	31	59	12.02	0.03	2	11.25	0.08	2	9.29	0.06	2	
499	5	13	8	-70	8	28	10.02	0.00	2	9.80	0.14	2	9.46	0.12	2	9166.203
500	5	13	22	-68	44	32	11.79	0.03	2	10.57	0.03	2	9.55	0.08	2	
501	5	13	32	-67	37	41	11.19	0.02	2	10.08	0.06	2	9.36	0.06	2	
502	5	13	33	-69	21	40	9.26	0.07	4	8.70	0.08	4	8.21	0.08	4	9162.280
503	5	13	33	-68	36	41	11.47	0.08	2	10.21	0.08	2	9.41	0.01	2	
504	5	13	35	-70	43	20	8.83	0.06	4	8.13	0.07	4	8.11	0.05	4	9166.144

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
505	5	13	35	-69	42	33	9.48	0.04	2	9.08	0.08	2	8.39	0.17	2	9166.153
506	5	13	36	-68	1	17	7.80	0.07	4	7.60	0.07	4	7.64	0.05	4	9162.792
507	5	13	38	-67	34	31	8.14	0.01	2	7.66	0.01	2	7.72	0.01	2	9162.357
508	5	13	39	-69	31	59	9.26	0.00	2	9.06	0.03	2	8.50	0.01	2	9166.51
509	5	13	39	-68	26	43	9.08	0.07	2	8.68	0.06	4	8.47	0.02	4	9162.862
510	5	13	41	-68	11	39	8.80	0.07	4	8.24	0.01	4	8.21	0.16	4	9162.672
511	5	13	44	-69	0	16	7.44	0.04	2	7.11	0.02	2	6.92	0.06	4	9162.850
512	5	13	54	-69	31	46	9.28	0.13	4	8.73	0.14	4	8.37	0.11	4	9166.317
513	5	13	57	-67	48	20	9.45	0.03	4	8.88	0.07	4	8.55	0.05	4	9162.594
514	5	14	0	-68	59	37	11.22	0.03	2	10.52	0.13	2	8.56	0.24	2	
515	5	14	1	-69	35	51	9.81	0.01	2	9.45	0.08	2	8.80	0.05	2	9166.488
516	5	14	2	-69	39	55	10.48	0.01	2	10.03	0.15	2	9.28	0.02	2	
517	5	14	13	-70	27	13	9.53	0.07	4	8.88	0.07	4	8.71	0.06	4	9166.370
518	5	14	18	-68	39	2	10.14	0.08	4	9.77	0.00	4	9.18	0.02	4	
519	5	14	27	-69	57	6	9.31	0.00	2	9.02	0.02	2	9.05	0.01	2	9166.327
520	5	14	33	-70	35	6	8.25	0.08	6	8.04	0.02	6	8.16	0.03	6	9166.212
521	5	14	41	-67	41	13	9.89	0.03	2	9.29	0.02	2	9.46	0.07	2	9162.476
522	5	14	47	-68	12	42	9.52	0.03	2	9.06	0.00	2	9.03	0.00	2	9162.30
523	5	14	47	-69	11	28	8.27	0.04	4	7.40	0.07	4	7.15	0.02	6	9162.295
524	5	14	48	-69	39	46	8.85	0.10	4	8.65	0.02	4	8.46	0.15	4	9166.369
525	5	14	50	-69	29	10	9.21	0.03	2	8.73	0.07	2	8.20	0.10	2	9166.221
526	5	14	53	-70	17	7	7.45	0.03	2	6.86	0.04	2	6.81	0.05	2	9166.101
527	5	14	56	-68	56	46	11.68	0.04	2	10.54	0.08	2	9.18	0.13	2	
528	5	14	59	-69	40	25	9.45	0.04	4	8.84	0.04	4	8.21	0.04	4	9166.307
529	5	15	1	-69	45	26	10.05	0.04	2	9.78	0.04	2	8.92	0.08	2	
530	5	15	3	-68	6	6	10.92	0.05	2	10.22	0.18	2	9.20	0.04	2	
531	5	15	10	-68	55	49	9.87	0.08	4	9.12	0.11	4	9.02	0.04	4	9162.770
532	5	15	12	-68	58	52	11.26	0.06	2	10.83	0.09	2	9.51	0.09	2	
533	5	15	16	-69	33	7	8.93	0.04	3	8.45	0.15	3	7.84	0.07	4	9166.654
534	5	15	17	-68	50	32	9.62	0.03	6	9.44	0.12	4	9.30	0.03	6	9162.331
535	5	15	21	-69	35	28	9.84	0.00	2	9.52	0.02	2	8.84	0.03	2	9166.697
536	5	15	35	-70	30	3	9.39	0.15	4	8.99	0.04	4	9.11	0.07	4	9166.173
537	5	15	35	-70	9	40	9.45	0.05	2	8.71	0.03	2	8.64	0.01	2	9166.269
538	5	15	37	-68	4	7	0.00	0.00	0	0.00	0.00	0	4.46	0.03	2	9162.528
539	5	15	38	-68	59	23	9.57	0.04	4	9.17	0.02	4	8.82	0.07	4	9162.819
540	5	15	41	-70	2	42	8.83	0.01	2	8.69	0.02	2	8.69	0.00	2	9166.18

Table 1—Continued

ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
541	5	15	45	-67	50	14	9.54	0.02	2	8.90	0.03	2	8.91	0.03	2	9162.430
542	5	15	55	-68	34	13	11.28	0.03	2	10.75	0.07	2	9.38	0.10	2	
543	5	15	58	-69	52	41	9.97	0.01	2	9.22	0.04	2	9.21	0.01	2	9166.672
544	5	16	3	-70	27	24	8.21	0.11	4	8.08	0.03	4	8.07	0.05	4	9166.728
545	5	16	4	-69	19	3	10.50	0.94	3	9.34	0.05	4	9.07	0.08	6	9162.457
546	5	16	4	-68	54	52	10.67	0.07	4	9.97	0.13	4	9.35	0.05	4	
547	5	16	7	-68	15	33	9.41	0.04	4	8.82	0.05	4	8.58	0.05	4	9162.291
548	5	16	7	-69	10	37	11.56	0.06	2	11.02	0.04	2	9.46	0.05	2	
549	5	16	15	-68	8	1	8.44	0.04	4	8.22	0.03	4	8.26	0.02	4	9162.332
550	5	16	20	-69	39	24	10.57	0.02	2	9.86	0.00	2	9.14	0.11	2	
551	5	16	23	-69	0	14	10.61	0.05	4	9.86	0.05	4	9.35	0.04	4	
552	5	16	23	-68	31	59	9.96	0.01	2	9.27	0.05	2	9.01	0.09	2	9162.38
553	5	16	28	-69	19	31	10.96	0.02	2	10.18	0.03	2	9.32	0.15	2	
554	5	16	33	-70	30	16	9.75	0.02	4	8.73	0.06	4	8.43	0.03	4	9166.319
555	5	16	31	-71	12	48	9.72	0.02	2	8.82	0.04	2	9.14	0.10	2	
556	5	16	38	-70	45	45	8.58	0.03	2	7.54	0.05	2	7.19	0.03	2	
557	5	16	43	-68	11	13	8.85	0.04	4	8.60	0.04	4	8.64	0.06	4	9162.467
558	5	16	44	-67	32	37	8.46	0.02	2	8.21	0.01	2	8.30	0.03	2	9162.246
559	5	16	45	-69	29	28	10.82	0.01	2	10.28	0.08	2	9.35	0.00	2	
560	5	16	48	-69	3	45	8.47	0.03	2	7.98	0.05	2	7.97	0.09	2	9162.506
561	5	16	53	-70	0	41	11.18	0.04	2	10.28	0.02	2	9.46	0.11	4	
562	5	16	52	-69	23	50	10.81	0.02	2	9.97	0.06	2	9.41	0.11	2	
563	5	16	52	-69	35	14	9.41	0.02	2	9.26	0.01	2	8.98	0.05	2	9166.642
564	5	16	53	-68	21	10	9.05	0.03	4	8.32	0.04	4	8.42	0.14	4	9162.379
565	5	16	55	-69	19	15	9.88	0.03	4	9.26	0.06	6	8.76	0.05	6	9162.337
566	5	16	56	-69	40	27	9.55	0.02	2	8.86	0.01	2	8.66	0.01	2	9166.580
567	5	16	58	-69	34	27	10.15	0.03	2	9.41	0.02	2	8.84	0.04	2	9166.383
568	5	16	58	-69	11	40	11.21	0.02	2	10.39	0.01	2	9.35	0.01	2	
569	5	16	59	-69	10	40	8.95	0.03	2	8.34	0.01	2	8.06	0.06	6	9162.89
570	5	16	59	-67	35	32	9.90	0.03	2	9.05	0.03	2	8.90	0.12	2	9162.134
571	5	17	3	-67	35	29	9.11	0.04	2	8.33	0.02	2	8.19	0.02	2	9162.668
572	5	17	4	-69	40	35	10.90	0.01	2	10.17	0.04	2	9.08	0.12	2	
573	5	17	4	-71	4	31	9.62	0.02	2	9.17	0.07	2	8.84	0.15	2	9166.763
574	5	17	7	-70	56	40	8.08	0.01	4	7.46	0.05	4	7.28	0.05	4	9166.881
575	5	17	9	-69	32	20	9.18	0.02	2	8.40	0.03	2	7.78	0.02	2	
576	5	17	11	-67	46	24	10.46	0.03	2	10.28	0.05	2	9.41	0.03	2	9162.41

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
577	5	17	16	-70	15	39	7.36	0.06	4	6.82	0.14	4	6.73	0.02	4	9166.435
578	5	17	22	-69	20	15	9.11	0.02	4	8.59	0.04	6	8.02	0.02	6	
579	5	17	27	-69	2	55	10.68	0.05	2	9.91	0.04	2	9.39	0.05	2	9162.760
580	5	17	28	-69	9	59	11.82	0.02	2	11.00	0.10	2	9.40	0.10	2	
581	5	17	29	-70	47	50	10.84	0.00	2	9.85	0.11	2	9.25	0.02	2	
582	5	17	30	-70	32	13	9.44	0.01	2	8.66	0.02	2	8.65	0.12	2	9166.425
583	5	17	34	-69	9	21	10.48	0.41	3	9.32	0.05	4	9.02	0.06	6	
584	5	17	34	-70	18	55	9.34	0.05	4	8.91	0.05	4	8.64	0.05	4	9166.441
585	5	17	34	-69	33	47	11.14	0.06	2	10.23	0.04	2	9.34	0.10	2	
586	5	17	35	-68	35	35	6.41	0.09	4	5.60	0.07	4	5.56	0.05	4	9162.504
587	5	17	43	-69	34	13	10.15	0.01	2	9.36	0.05	2	8.87	0.00	2	9166.195
588	5	17	48	-68	45	59	10.48	0.01	2	9.81	0.04	2	9.53	0.10	2	9162.174
589	5	17	53	-70	5	47	11.34	0.01	2	10.33	0.09	2	9.30	0.24	2	
590	5	17	53	-69	33	30	10.79	0.00	2	10.02	0.02	2	9.34	0.12	2	
591	5	17	56	-69	40	24	9.69	0.00	2	8.92	0.02	2	8.64	0.03	2	9166.638
592	5	17	57	-68	8	39	9.97	0.12	4	9.34	0.26	4	8.64	0.05	4	
593	5	17	58	-69	15	53	7.69	0.03	4	6.87	0.02	4	6.46	0.03	6	9162.497
594	5	18	1	-69	33	36	9.49	0.02	2	9.26	0.01	2	8.66	0.03	2	9166.727
595	5	18	2	-68	21	18	8.85	0.00	2	8.80	0.02	2	8.99	0.02	2	9162.732
596	5	18	3	-68	27	57	7.14	0.00	2	6.43	0.06	2	6.45	0.01	2	9162.573
597	5	18	4	-69	35	9	10.35	0.01	2	9.50	0.00	2	9.38	0.07	2	9166.490
598	5	18	10	-69	44	26	10.15	0.02	2	9.52	0.00	2	9.30	0.06	4	9166.582
599	5	18	12	-68	25	34	9.83	0.00	2	9.75	0.01	2	9.56	0.04	2	9162.669
600	5	18	14	-69	15	1	8.98	0.02	4	8.78	0.02	4	8.52	0.07	6	9162.57
601	5	18	15	-70	56	8	11.17	0.03	2	10.24	0.11	2	9.40	0.12	2	
602	5	18	18	-69	32	22	10.17	0.01	2	9.42	0.01	2	9.02	0.01	2	9166.870
603	5	18	18	-69	34	14	11.09	0.05	2	10.08	0.01	2	9.04	0.14	2	
604	5	18	20	-69	38	35	12.54	0.05	2	10.83	0.05	2	9.44	0.05	2	
605	5	18	22	-68	28	1	9.82	0.02	2	9.79	0.02	2	9.44	0.06	2	9162.142
606	5	18	25	-69	21	39	8.62	0.05	4	8.12	0.06	4	8.08	0.06	4	9162.126
607	5	18	28	-69	45	23	10.30	0.00	2	9.50	0.00	2	9.08	0.10	2	9166.497
608	5	18	30	-69	36	22	10.32	0.01	2	9.71	0.02	2	9.17	0.03	2	
609	5	18	30	-68	6	28	9.53	0.20	4	8.75	0.11	4	8.34	0.03	4	9162.995
610	5	18	32	-69	48	5	11.44	0.01	4	10.34	0.03	4	9.18	0.06	4	
611	5	18	32	-68	13	30	9.23	0.02	2	8.99	0.03	2	9.03	0.01	2	9162.347
612	5	18	32	-67	32	31	6.81	0.01	2	5.76	0.00	2	5.71	0.00	2	9162.318

Table 1—Continued

ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
613	5	18	36	-70	0	37	11.33	0.02	2	10.36	0.02	2	9.50	0.11	2	
614	5	18	37	-69	24	26	8.86	0.03	4	8.26	0.02	4	8.05	0.06	4	
615	5	18	41	-69	22	21	10.29	0.05	4	9.54	0.05	4	9.22	0.05	4	
616	5	18	41	-70	7	53	9.56	0.10	6	9.18	0.04	6	8.82	0.05	6	9166.701
617	5	18	55	-69	39	20	9.55	0.01	2	8.71	0.05	2	8.36	0.08	4	9166.770
618	5	18	56	-67	56	12	9.08	0.08	4	7.98	0.06	4	7.71	0.04	4	9162.713
619	5	18	59	-69	41	44	9.85	0.01	2	9.07	0.00	2	8.91	0.04	4	9166.829
620	5	18	59	-68	44	19	7.86	0.03	6	7.40	0.06	6	7.28	0.01	6	9162.788
621	5	19	4	-69	39	55	8.66	0.01	2	8.04	0.00	2	7.82	0.03	4	9166.50
622	5	19	6	-69	39	22	9.27	0.00	2	8.67	0.03	2	8.13	0.09	4	9166.177
623	5	19	6	-69	11	43	10.49	0.04	4	9.68	0.03	4	9.20	0.04	4	9162.417
624	5	19	6	-68	45	50	8.50	0.06	6	8.40	0.10	6	8.37	0.05	6	9162.828
625	5	19	12	-69	52	23	11.54	0.04	2	10.45	0.05	2	9.31	0.01	2	
626	5	19	15	-67	41	47	9.69	0.24	3	8.84	0.03	2	8.76	0.08	4	9162.294
627	5	19	17	-67	51	49	7.08	0.04	2	5.80	0.05	4	5.32	0.05	4	9162 696
628	5	19	30	-68	41	10	10.97	0.42	2	9.95	0.07	2	9.25	0.01	2	9162.741
629	5	19	30	-70	39	0	10.90	0.01	2	9.82	0.09	2	9.16	0.12	2	
630	5	19	31	-68	53	40	10.08	0.00	2	9.45	0.07	2	8.79	0.06	2	
631	5	19	32	-69	25	35	9.67	0.05	4	8.98	0.05	4	8.53	0.07	4	9166.924
632	5	19	32	-67	52	45	7.42	0.07	4	6.33	0.05	4	6.03	0.05	4	9162.233
633	5	19	35	-69	56	57	10.00	0.02	2	9.65	0.04	2	9.23	0.07	2	9166.331
634	5	19	35	-69	45	30	10.94	0.04	2	10.09	0.06	2	9.28	0.01	2	
635	5	19	36	-69	20	40	11.85	0.00	2	10.64	0.05	2	9.61	0.06	2	
636	5	19	39	-69	25	27	10.58	0.01	2	9.74	0.04	2	9.41	0.03	2	
637	5	19	44	-69	30	54	10.63	0.01	2	9.81	0.04	2	9.01	0.08	2	
638	5	19	44	-68	2	26	10.65	0.06	2	9.45	0.02	2	8.60	0.04	2	
639	5	19	48	-69	2	49	12.49	0.09	2	0.00	0.00	0	9.41	0.12	2	
640	5	19	49	-69	30	6	10.10	0.01	2	9.51	0.02	2	9.20	0.04	2	9166.107
641	5	19	50	-69	16	47	10.23	0.04	4	9.41	0.04	4	9.18	0.03	4	
642	5	19	50	-69	26	49	10.25	0.06	4	9.46	0.05	4	9.21	0.07	4	9166.755
643	5	19	53	-68	4	4	8.87	0.04	2	7.60	0.01	2	7.19	0.04	2	9162.774
644	5	19	53	-69	27	34	8.99	0.01	2	8.43	0.07	2	7.82	0.01	2	9166.558
645	5	19	54	-68	32	30	10.06	0.01	2	9.64	0.04	2	9.14	0.19	2	9162.116
646	5	19	58	-68	0	3	9.76	0.03	2	8.75	0.03	2	8.04	0.03	2	9162.917
647	5	19	59	-67	39	7	9.56	0.14	4	8.85	0.05	4	8.79	0.05	4	9162.177
648	5	20	1	-67	34	42	10.59	0.03	2	11.95	0.00	1	8.52	0.03	2	

Table 1—Continued

ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
649	5	20	8	-69	32	15	10.84	0.01	2	9.90	0.03	2	9.38	0.07	2	
650	5	20	9	-70	44	19	9.00	0.02	2	8.92	0.02	2	8.93	0.01	2	9166.242
651	5	20	13	-69	40	28	9.76	0.00	2	8.92	0.02	2	8.58	0.03	4	
652	5	20	13	-70	57	46	6.64	0.01	2	5.84	0.00	2	5.92	0.02	2	9166.257
653	5	20	16	-69	30	5	9.80	0.01	2	9.44	0.04	2	9.18	0.05	2	9166.486
654	5	20	19	-69	35	29	10.73	0.00	2	10.05	0.02	2	9.07	0.04	2	
655	5	20	20	-69	2	23	9.39	0.07	4	9.27	0.09	4	9.03	0.09	6	9162.857
656	5	20	21	-69	40	53	10.11	0.03	2	9.24	0.04	2	9.29	0.05	4	9166.137
657	5	20	23	-69	33	26	9.26	0.02	2	8.41	0.03	2	8.40	0.12	4	9166.938
658	5	20	26	-69	37	32	10.78	0.04	2	10.13	0.00	2	9.32	0.10	2	
659	5	20	27	-71	11	53	8.46	0.01	2	8.05	0.01	2	8.18	0.11	2	9166.761
660	5	20	34	-69	54	20	10.97	0.02	2	10.02	0.00	2	9.35	0.02	2	
661	5	20	34	-67	30	43	11.14	0.04	2	9.92	0.01	2	9.29	0.07	2	
662	5	20	36	-67	33	20	9.59	0.04	2	8.60	0.01	2	8.41	0.01	2	9162.296
663	5	20	37	-69	33	44	10.40	0.01	2	9.87	0.09	2	9.22	0.01	2	9166.281
664	5	20	40	-69	19	30	10.66	0.02	2	9.87	0.03	2	9.39	0.11	2	9162.195
665	5	20	43	-69	21	14	10.72	0.05	4	9.88	0.05	4	9.26	0.04	4	
666	5	20	46	-69	34	46	10.39	0.02	2	9.78	0.03	2	9.15	0.04	4	
667	5	20	47	-69	1	24	10.87	0.11	4	10.14	0.17	4	9.17	0.09	4	
668	5	20	53	-69	15	34	7.99	0.08	6	7.59	0.05	6	7.55	0.04	6	9162.805
669	5	20	56	-67	59	2	7.05	0.04	2	6.23	0.00	2	5.83	0.08	2	9162.880
670	5	21	2	-68	21	14	7.19	0.06	4	6.60	0.05	4	6.48	0.10	4	9162.877
671	5	21	14	-69	28	26	8.30	0.01	2	7.96	0.06	2	7.64	0.02	4	9166.145
672	5	21	28	-69	30	14	9.42	0.04	4	8.64	0.08	4	8.16	0.03	4	9166.273
673	5	21	30	-70	0	6	11.42	0.00	2	10.27	0.06	2	9.32	0.05	2	
674	5	21	33	-69	6	23	11.37	0.07	4	10.35	0.14	4	9.30	0.09	4	
675	5	21	37	-70	47	0	10.25	0.01	2	9.36	0.02	2	9.40	0.04	2	
676	5	21	38	-69	26	2	10.13	0.01	2	9.61	0.01	2	9.34	0.00	2	9166.710
677	5	21	41	-70	34	25	8.77	0.20	4	8.69	0.03	4	8.92	0.08	4	9166.230
678	5	21	43	-69	21	25	9.82	0.02	4	9.13	0.06	4	8.66	0.07	6	9162.1043
679	5	21	46	-69	43	55	9.73	0.03	2	9.15	0.02	2	8.86	0.12	4	9166.315
680	5	21	47	-67	56	40	10.80	0.02	2	10.05	0.02	2	9.40	0.17	2	9162.68
681	5	21	48	-67	57	51	10.03	0.05	2	8.63	0.01	2	8.26	0.01	2	9162.545
682	5	21	48	-69	59	18	9.74	0.01	2	9.15	0.06	2	9.44	0.13	2	9166.745
683	5	21	58	-68	45	20	8.86	0.06	4	8.23	0.04	4	8.00	0.03	4	9162.874
684	5	21	59	-69	58	58	11.11	0.03	2	10.25	0.05	2	9.50	0.15	2	

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
685	5	22	1	-68	21	32	9.40	0.02	2	8.96	0.01	2	9.01	0.03	2	9162.866
686	5	22	8	-68	4	28	8.68	0.09	4	8.17	0.10	4	8.17	0.08	4	9162.61
687	5	22	11	-69	45	54	8.90	0.03	2	8.46	0.00	2	8.49	0.05	4	9166.641
688	5	22	11	-69	17	23	9.48	0.06	4	8.67	0.03	4	8.56	0.07	6	9162.791
689	5	22	13	-70	56	24	9.18	0.00	2	8.86	0.03	2	8.64	0.05	2	9166.706
690	5	22	14	-68	3	3	10.71	0.02	2	9.52	0.03	2	9.06	0.13	2	
691	5	22	14	-69	30	22	11.62	0.03	2	10.71	0.06	2	9.31	0.15	2	
692	5	22	19	-67	51	30	9.84	0.05	2	9.19	0.01	2	8.82	0.13	2	9162.551
693	5	22	23	-69	22	53	10.38	0.03	6	9.67	0.04	6	9.19	0.04	6	9166.452
694	5	22	27	-68	8	50	10.37	0.06	2	9.47	0.02	2	9.01	0.05	2	9162.329
695	5	22	29	-70	15	12	10.16	0.01	2	9.83	0.04	2	9.16	0.06	2	9166.285
696	5	22	31	-69	34	6	9.62	0.12	4	9.13	0.05	4	8.57	0.03	4	
697	5	22	35	-70	24	7	8.91	0.10	4	8.45	0.04	4	8.29	0.02	4	9166.76
698	5	22	36	-68	59	51	10.28	0.02	2	9.86	0.01	2	9.63	0.13	2	9162.339
699	5	22	38	-70	15	51	10.26	0.04	2	9.91	0.03	2	9.31	0.07	2	9166.219
700	5	22	43	-69	37	19	10.55	0.03	2	10.05	0.02	2	9.13	0.12	2	
701	5	22	44	-67	48	7	10.30	0.04	2	9.47	0.07	2	9.28	0.17	2	9162.875
702	5	22	45	-68	49	47	7.31	0.05	6	6.60	0.06	6	6.42	0.05	6	9162.873
703	5	22	47	-69	24	52	11.25	0.02	2	10.38	0.00	2	9.11	0.12	2	
704	5	22	50	-69	48	56	10.11	0.00	2	9.39	0.05	2	9.22	0.08	4	9166.397
705	5	22	59	-70	41	4	9.18	0.02	2	8.62	0.01	2	8.27	0.02	2	9166.734
706	5	23	0	-68	3	52	9.58	0.06	4	10.02	0.62	4	8.94	0.06	4	9162.276
707	5	23	3	-69	20	41	9.67	0.04	6	8.94	0.04	6	8.48	0.06	6	
708	5	23	5	-69	7	55	11.44	0.03	2	10.88	0.09	2	9.22	0.09	4	
709	5	23	10	-67	50	4	10.65	0.04	2	9.65	0.09	2	8.62	0.03	2	
710	5	23	13	-69	33	43	9.73	0.04	2	9.45	0.02	2	9.22	0.03	2	9166.446
711	5	23	14	-70	35	57	9.96	0.00	2	8.88	0.01	2	8.85	0.03	2	9166.61
712	5	23	15	-67	54	10	8.83	0.02	2	7.64	0.04	2	7.60	0.03	4	9162.209
713	5	23	15	-67	59	40	9.89	0.08	4	8.91	0.07	3	8.62	0.04	4	9162.879
714	5	23	17	-69	26	51	11.58	0.05	2	10.49	0.03	2	9.36	0.12	2	
715	5	23	17	-69	27	52	8.93	0.04	4	8.14	0.02	4	7.63	0.09	4	9166.336
716	5	23	18	-69	25	38	10.16	0.02	2	9.72	0.01	2	9.49	0.04	2	9166.724
717	5	23	23	-68	31	44	9.67	0.00	2	9.29	0.01	2	9.13	0.07	2	9162.83
718	5	23	25	-69	25	36	10.53	0.07	4	9.81	0.01	4	9.19	0.07	4	
719	5	23	29	-69	42	49	10.43	0.02	2	9.67	0.04	2	9.21	0.08	2	
720	5	23	34	-69	19	7	9.93	0.01	4	9.92	0.66	5	8.86	0.04	6	9162.981

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
721	5	23	36	-70	7	8	9.21	0.08	4	8.74	0.06	4	8.88	0.21	4	9166.655
722	5	23	37	-69	44	44	10.55	0.01	2	9.81	0.00	2	9.21	0.07	2	
723	5	23	37	-70	4	48	10.91	0.03	2	10.03	0.06	2	9.12	0.07	2	
724	5	23	38	-68	37	19	10.29	0.04	4	9.46	0.07	4	9.39	0.01	4	
725	5	23	39	-69	30	10	7.68	0.05	4	7.19	0.01	4	7.38	0.29	4	9166.420
726	5	23	43	-68	10	16	9.43	0.03	6	8.90	0.04	6	8.74	0.09	6	9162.586
727	5	23	45	-70	40	44	9.16	0.01	2	8.58	0.02	2	8.42	0.02	2	9166.612
728	5	23	46	-69	1	4	10.30	0.03	2	9.79	0.01	2	9.10	0.10	2	9162.954
729	5	23	47	-70	7	38	10.50	0.00	2	9.46	0.02	2	9.25	0.03	2	
730	5	23	54	-70	10	5	10.39	0.04	4	9.66	0.03	4	8.97	0.06	4	
731	5	23	55	-69	19	56	9.45	0.09	4	8.95	0.04	4	8.79	0.02	4	9162.670
732	5	23	57	-69	26	46	10.16	0.05	2	9.57	0.04	2	9.41	0.06	2	9166.545
733	5	24	3	-69	24	0	9.54	0.08	4	9.07	0.03	4	8.91	0.04	4	9166.365
734	5	24	4	-69	12	24	12.04	0.02	2	10.63	0.05	2	9.43	0.08	2	
735	5	24	11	-71	9	6	8.77	0.05	2	8.80	0.67	2	8.55	0.03	2	9166.913
736	5	24	18	-70	26	0	9.39	0.01	2	8.81	0.00	2	8.14	0.01	2	9166.472
737	5	24	18	-68	11	30	9.68	0.03	2	9.02	0.06	2	9.06	0.02	2	9162.269
738	5	24	19	-69	38	49	8.53	0.01	2	7.61	0.01	2	7.05	0.02	2	9166.854
739	5	24	23	-68	57	36	11.08	0.02	2	10.22	0.04	2	9.53	0.10	2	
740	5	24	27	-70	30	33	8.55	0.02	2	7.72	0.00	2	7.65	0.01	2	9166.469
741	5	24	27	-67	52	34	10.07	0.06	4	9.13	0.04	4	9.38	0.08	4	9162.127
742	5	24	33	-70	42	40	10.37	0.12	4	9.63	0.03	4	9.22	0.10	4	
743	5	24	43	-70	0	0	10.00	0.03	4	9.09	0.04	4	8.85	0.04	4	9166.520
744	5	24	44	-67	53	49	7.45	0.04	4	6.71	0.02	4	6.47	0.07	4	9162.322
745	5	24	45	-69	27	57	9.16	0.05	4	8.43	0.01	4	8.18	0.07	4	9166.796
746	5	24	46	-68	29	30	9.43	0.08	4	8.61	0.12	4	8.32	0.03	4	9162.978
747	5	24	47	-71	1	35	8.81	0.00	2	8.18	0.03	2	7.64	0.10	2	9166.858
748	5	24	52	-69	11	9	10.86	0.04	4	10.02	0.03	4	9.33	0.12	4	
749	5	24	57	-69	41	16	10.07	0.02	2	9.37	0.00	2	8.96	0.06	4	9166.368
750	5	25	0	-69	48	40	11.08	0.05	2	10.31	0.02	2	9.35	0.10	2	9166.521
751	5	25	3	-68	0	11	6.77	0.00	2	6.19	0.05	2	6.00	0.07	2	9162.251
752	5	25	11	-68	42	45	10.37	0.11	6	9.72	0.02	4	9.10	0.08	6	
753	5	25	14	-69	15	15	9.07	0.04	6	8.65	0.05	6	8.44	0.03	6	9162.330
754	5	25	21	-69	52	36	10.51	0.09	4	9.69	0.03	4	9.18	0.03	6	
755	5	25	25	-70	11	35	8.73	0.03	2	8.16	0.01	2	7.92	0.05	2	9166.133
756	5	25	27	-70	57	32	9.50	0.00	2	8.82	0.04	2	8.76	0.03	2	9166.310

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
757	5	25	31	-69	20	46	9.48	0.06	4	9.27	0.06	4	9.09	0.09	4	9162.599
758	5	25	31	-67	46	18	9.17	0.04	4	8.62	0.10	4	8.57	0.07	4	9162.773
759	5	25	33	-69	22	19	9.74	0.02	4	9.39	0.04	4	9.38	0.07	4	9162.653
760	5	25	34	-70	2	43	11.34	0.01	2	10.39	0.05	2	9.19	0.13	2	
761	5	25	36	-68	36	58	10.39	0.02	2	9.63	0.04	2	8.93	0.03	2	
762	5	25	36	-69	42	51	11.25	0.07	2	10.29	0.04	2	9.35	0.02	2	
763	5	25	38	-69	35	45	8.15	0.01	2	7.88	0.03	2	7.70	0.06	2	9166.667
764	5	25	38	-69	42	29	10.84	0.01	2	9.88	0.06	2	9.12	0.08	2	9166.66
765	5	25	40	-70	15	53	11.34	0.04	2	10.40	0.02	2	9.37	0.07	2	
766	5	25	41	-71	9	24	8.67	0.01	2	7.80	0.01	2	7.98	0.00	2	9166.895
767	5	25	44	-69	27	41	10.76	0.02	2	10.11	0.06	2	9.09	0.04	2	
768	5	25	45	-69	44	54	10.78	0.00	2	9.90	0.01	2	9.02	0.05	2	
769	5	25	45	-69	4	48	9.23	0.07	4	8.45	0.09	4	8.00	0.06	6	
770	5	25	45	-68	28	4	10.47	0.01	2	9.68	0.03	2	9.06	0.04	2	
771	5	25	48	-68	56	22	9.85	0.06	2	9.42	0.08	2	8.93	0.07	2	9162.714
772	5	25	52	-70	28	11	10.43	0.04	2	9.37	0.02	2	8.86	0.07	2	
773	5	25	54	-68	25	54	8.75	0.12	4	8.17	0.07	4	7.96	0.08	4	9162.203
774	5	25	56	-70	58	14	8.93	0.00	2	8.62	0.01	2	8.83	0.03	2	9166.47
775	5	25	57	-68	22	41	12.23	0.04	2	11.20	0.00	2	9.35	0.04	2	
776	5	25	58	-70	11	5	9.69	0.02	2	8.96	0.02	2	8.84	0.02	2	9166.673
777	5	25	58	-69	4	44	9.05	0.08	4	8.71	0.05	4	8.73	0.07	6	9162.207
778	5	26	2	-69	4	17	9.70	0.13	4	9.52	0.11	4	9.34	0.17	4	9162.803
779	5	26	9	-67	33	16	8.87	0.02	2	8.45	0.02	2	8.23	0.04	2	9162.384
780	5	26	11	-67	34	7	10.05	0.03	2	9.32	0.02	2	9.18	0.02	2	9162.566
781	5	26	12	-69	55	24	12.09	0.01	2	10.64	0.07	2	9.41	0.06	2	
782	5	26	13	-69	48	27	11.87	0.13	2	10.68	0.06	2	9.48	0.06	2	
783	5	26	16	-70	43	25	9.57	0.00	2	9.10	0.03	2	9.54	0.01	2	9166.326
784	5	26	20	-69	30	13	10.11	0.02	2	9.41	0.03	2	9.24	0.01	2	9166.585
785	5	26	24	-69	52	27	8.29	0.19	4	7.61	0.07	4	7.25	0.03	4	9166.514
786	5	26	24	-69	58	22	10.71	0.04	2	9.78	0.02	2	9.46	0.09	2	
787	5	26	26	-67	49	27	8.92	0.03	2	8.46	0.00	2	8.64	0.05	2	9162.139
788	5	26	27	-69	10	55	8.87	0.03	4	8.21	0.10	4	7.77	0.06	6	9162.975
789	5	26	27	-71	6	55	8.49	0.01	2	7.62	0.03	2	7.41	0.02	2	9166.879
790	5	26	27	-68	53	0	10.55	0.01	2	12.17	0.00	1	9.30	0.07	2	9162.864
791	5	26	28	-69	7	58	9.64	0.10	4	8.93	0.08	4	8.40	0.02	6	9162.1011
792	5	26	34	-69	22	33	10.42	0.02	2	9.75	0.04	2	9.38	0.04	2	9166.474

Table 1—Continued

ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
793	5	26	34	-68	6	1	9.82	0.01	2	9.32	0.01	2	9.28	0.01	2	9162.494
794	5	26	35	-68	51	39	8.35	0.08	4	7.68	0.09	5	7.23	0.03	6	9162.250
795	5	26	38	-70	3	50	6.58	0.04	2	5.55	0.02	2	5.34	0.06	2	9166.401
796	5	26	39	-68	24	22	11.11	0.04	2	10.44	0.04	2	9.54	0.19	2	
797	5	26	40	-70	0	58	11.08	0.03	2	10.06	0.06	2	9.31	0.07	2	
798	5	26	41	-70	44	19	8.66	0.01	2	8.31	0.05	2	8.26	0.02	2	9166.458
799	5	26	42	-68	56	38	9.66	0.04	4	9.05	0.05	4	8.64	0.04	4	9162.985
800	5	26	43	-68	57	13	9.68	0.06	4	8.97	0.05	4	8.55	0.06	4	
801	5	26	45	-69	6	7	9.55	0.07	4	8.95	0.02	4	8.58	0.08	6	9162.473
802	5	26	53	-68	49	59	8.06	0.03	6	7.38	0.03	6	6.88	0.04	6	9162.971
803	5	26	55	-70	45	20	10.00	0.02	2	9.55	0.05	2	9.43	0.04	2	9166.676
804	5	26	55	-69	41	28	10.43	0.04	2	10.09	0.03	2	9.20	0.06	2	9166.599
805	5	26	55	-69	31	58	10.72	0.01	2	9.99	0.02	2	9.43	0.02	2	
806	5	26	58	-68	52	2	10.65	0.02	2	10.02	0.08	2	9.07	0.10	2	
807	5	26	59	-68	37	22	0.00	0.00	0	5.25	0.01	2	5.21	0.02	2	9162.936
808	5	27	3	-69	5	20	10.34	0.03	4	9.58	0.06	4	9.08	0.13	4	9162.194
809	5	27	5	-68	30	9	8.06	0.01	2	7.44	0.04	2	7.30	0.01	2	9162.284
810	5	27	7	-70	50	6	9.31	0.01	2	8.43	0.03	2	8.39	0.00	2	9166.618
811	5	27	10	-69	36	27	11.33	0.15	4	10.64	0.05	4	9.23	0.07	4	
812	5	27	10	-69	16	18	9.95	0.02	4	9.35	0.03	4	9.11	0.13	4	
813	5	27	14	-69	11	13	9.43	0.05	2	8.76	0.01	2	8.10	0.06	4	
814	5	27	16	-70	14	1	9.77	0.02	2	9.70	0.01	2	9.28	0.20	2	9166.117
815	5	27	19	-69	10	44	11.10	0.01	2	10.02	0.05	2	9.54	0.05	2	
816	5	27	21	-69	26	24	7.98	0.09	3	7.34	0.03	2	7.02	0.02	4	9166.88
817	5	27	22	-67	28	59	9.77	0.01	2	8.77	0.01	2	8.44	0.01	2	8891.3212
818	5	27	23	-68	49	40	10.16	0.01	4	9.65	0.04	4	9.24	0.14	4	9162.564
819	5	27	24	-69	38	8	11.03	0.00	2	10.39	0.49	2	9.09	0.06	2	
820	5	27	26	-69	0	1	9.83	0.04	4	9.09	0.03	4	8.74	0.08	4	9162.431
821	5	27	28	-69	0	37	9.33	0.09	4	8.80	0.05	4	8.25	0.11	4	9162.460
822	5	27	28	-71	13	0	8.09	0.01	2	7.81	0.03	2	8.38	0.01	2	9166.862
823	5	27	29	-69	22	10	8.87	0.02	4	8.38	0.02	4	8.24	0.04	6	9162.433
824	5	27	33	-70	1	10	10.41	0.06	2	9.32	0.00	2	8.81	0.05	2	
825	5	27	38	-69	28	46	9.49	0.10	4	8.68	0.00	4	8.13	0.04	4	9166.795
826	5	27	40	-69	9	3	9.15	0.01	2	8.41	0.07	2	7.90	0.09	4	9162.130
827	5	27	40	-69	8	8	9.12	0.02	2	8.82	0.03	2	8.41	0.03	4	9162.197
828	5	27	40	-68	44	2	10.03	0.04	2	9.45	0.05	2	9.11	0.04	2	9162.542

Table 1—Continued

ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
829	5	27	42	-68	53	39	10.39	0.02	2	10.16	0.07	2	9.50	0.06	2	9162.236
830	5	27	42	-68	4	26	7.01	0.02	4	6.41	0.05	4	6.44	0.05	6	9162.618
831	5	27	43	-68	59	5	8.36	0.13	4	7.86	0.14	4	7.67	0.05	4	9162.230
832	5	27	45	-68	18	7	9.58	0.02	4	9.07	0.04	4	8.93	0.07	4	9162.398
833	5	27	47	-69	13	22	8.92	0.02	2	8.18	0.02	2	7.64	0.05	4	9162.783
834	5	27	51	-69	10	49	0.00	0.00	0	0.00	0.00	0	8.36	0.00	2	9162.1105
835	5	27	52	-69	0	23	9.54	0.02	2	9.40	0.06	2	9.09	0.05	2	9162.543
836	5	27	54	-67	35	43	8.84	0.00	2	8.58	0.02	2	8.71	0.05	2	9162.444
837	5	27	55	-68	23	29	9.74	0.02	2	9.07	0.05	2	8.99	0.07	2	9162.830
838	5	28	0	-69	7	44	10.00	0.03	2	9.66	0.12	2	9.08	0.04	2	9162.305
839	5	28	3	-69	45	53	10.53	0.02	2	9.84	0.07	2	9.30	0.11	2	9166.774
840	5	28	5	-67	37	47	9.61	0.04	2	8.74	0.01	2	8.58	0.05	2	9162.122
841	5	28	6	-70	7	55	12.07	0.00	2	10.80	0.13	2	9.59	0.08	2	
842	5	28	6	-69	7	14	9.24	0.02	2	8.44	0.08	2	7.62	0.05	2	
843	5	28	8	-69	2	14	9.91	0.04	2	9.03	0.03	2	8.29	0.00	2	9162.795
844	5	28	8	-69	13	12	0.00	0.00	0	0.00	0.00	0	8.24	0.04	4	
845	5	28	9	-71	5	46	8.44	0.01	2	8.11	0.02	2	8.20	0.15	2	9166.931
846	5	28	15	-69	55	51	8.57	0.01	2	7.96	0.02	2	8.08	0.02	2	9166.406
847	5	28	16	-69	11	58	9.79	0.04	2	9.05	0.03	2	8.57	0.08	6	9162.960
848	5	28	16	-69	27	23	10.54	0.06	4	9.73	0.04	4	9.30	0.08	4	9166.162
849	5	28	17	-67	49	5	10.45	0.06	2	9.74	0.06	2	9.18	0.02	2	
850	5	28	18	-69	7	34	9.44	0.01	2	8.90	0.07	2	8.43	0.01	2	9162.93
851	5	28	21	-69	3	26	10.39	0.06	2	9.64	0.01	2	9.20	0.17	2	
852	5	28	23	-69	8	35	8.24	0.02	2	7.69	0.01	2	7.10	0.07	4	9162.657
853	5	28	24	-67	52	21	7.84	0.07	2	7.15	0.00	2	7.02	0.04	2	9162.214
854	5	28	26	-70	53	58	7.65	0.01	2	7.32	0.07	2	7.35	0.00	2	9166.16
855	5	28	28	-69	12	55	8.96	0.03	2	8.71	0.03	2	8.28	0.05	6	9162.843
856	5	28	28	-68	7	10	8.35	0.05	6	7.67	0.03	6	7.32	0.06	6	9162.1046
857	5	28	30	-69	0	43	9.68	0.01	2	8.93	0.02	2	8.35	0.03	2	9162.493
858	5	28	31	-69	5	31	9.28	0.03	2	8.56	0.01	2	8.04	0.08	2	9162.767
859	5	28	36	-68	26	15	9.15	0.01	2	8.33	0.06	2	7.93	0.02	2	9162.299
860	5	28	36	-69	20	2	10.23	0.04	6	9.54	0.04	6	9.17	0.03	6	
861	5	28	37	-68	42	37	9.17	0.02	4	8.38	0.06	4	7.88	0.05	4	9162.452
862	5	28	38	-69	31	33	12.14	0.04	2	11.14	0.04	2	9.51	0.33	2	
863	5	28	39	-68	7	4	11.10	0.03	2	10.68	0.03	2	8.65	0.34	2	9162.376
864	5	28	41	-68	56	7	10.08	0.10	4	9.18	0.04	4	8.85	0.06	4	9162.1040

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
865	5	28	41	-68	49	1	9.80	0.03	4	9.43	0.06	4	9.31	0.09	4	9162.764
866	5	28	45	-68	58	5	8.67	0.01	2	8.04	0.07	4	7.77	0.08	4	9162.190
867	5	28	46	-69	54	48	11.04	0.01	2	9.76	0.05	2	9.21	0.06	2	
868	5	28	47	-71	2	31	12.33	0.03	2	11.24	0.12	2	9.41	0.01	2	
869	5	28	51	-68	46	44	10.29	0.03	4	9.43	0.10	4	8.98	0.07	4	
870	5	28	52	-70	0	47	9.99	0.03	2	9.13	0.03	2	8.82	0.10	4	
871	5	28	52	-67	55	17	10.04	0.02	4	9.91	0.76	3	9.15	0.07	4	9162.1052
872	5	28	53	-70	12	7	11.80	0.06	2	10.98	0.04	2	9.30	0.16	2	
873	5	28	54	-68	3	0	8.15	0.04	4	7.61	0.04	4	7.38	0.03	4	9162.334
874	5	29	1	-68	46	35	9.67	0.02	4	8.84	0.09	4	8.37	0.02	4	
875	5	29	1	-68	53	43	10.08	0.03	4	9.32	0.07	4	9.17	0.12	4	
876	5	29	3	-69	48	10	10.06	0.03	2	9.32	0.04	2	8.83	0.06	4	
877	5	29	3	-69	6	43	9.13	0.01	2	8.44	0.01	2	8.04	0.01	4	
878	5	29	4	-70	38	35	8.01	0.01	2	6.99	0.04	2	6.68	0.02	2	9166.306
879	5	29	8	-69	12	19	9.45	0.04	4	8.74	0.03	4	8.30	0.04	6	9162.26
880	5	29	9	-70	49	27	8.12	0.02	4	8.70	0.49	4	8.16	0.08	4	9166.165
881	5	29	10	-70	35	19	10.97	0.02	2	10.02	0.00	2	9.17	0.07	2	
882	5	29	21	-69	0	19	8.74	0.00	4	8.08	0.01	4	7.91	0.10	10	9162.786
883	5	29	21	-68	47	32	9.03	0.04	4	8.32	0.05	4	8.03	0.04	6	9162.782
884	5	29	21	-68	44	11	9.58	0.04	5	8.90	0.09	6	8.59	0.03	6	9162.571
885	5	29	25	-69	58	23	10.16	0.00	1	9.69	0.02	2	8.95	0.06	2	9166.283
886	5	29	25	-69	56	23	0.00	0.00	0	0.00	0.00	0	9.38	0.11	2	
887	5	29	27	-69	0	1	10.51	0.04	2	9.80	0.05	2	9.29	0.12	4	
888	5	29	27	-68	52	5	8.46	0.02	4	8.14	0.06	4	8.10	0.10	4	9162.698
889	5	29	27	-69	8	48	8.57	0.06	4	7.84	0.04	4	7.37	0.06	4	9162.475
890	5	29	28	-70	38	49	10.05	0.02	2	9.14	0.01	2	9.01	0.01	2	9166.287
891	5	29	29	-68	51	39	10.26	0.03	4	9.55	0.10	4	9.25	0.04	4	9162.244
892	5	29	29	-70	8	1	11.33	0.05	4	10.28	0.08	4	9.34	0.06	4	
893	5	29	30	-70	15	22	10.01	0.01	2	9.99	0.03	2	9.20	0.03	2	9166.91
894	5	29	31	-68	47	59	10.51	0.02	4	9.71	0.04	4	9.15	0.06	4	
895	5	29	32	-68	36	49	10.22	0.01	2	9.36	0.09	2	9.25	0.03	2	9162.483
896	5	29	33	-69	26	41	9.50	0.07	4	9.07	0.06	4	8.78	0.06	4	9166.217
897	5	29	34	-68	53	11	10.39	0.01	2	9.72	0.01	2	9.15	0.13	2	
898	5	29	35	-68	30	47	9.80	0.02	2	8.91	0.12	4	8.51	0.03	4	
899	5	29	35	-70	5	13	11.02	0.01	2	10.22	0.08	2	9.23	0.12	2	
900	5	29	40	-70	15	39	6.75	0.08	4	5.99	0.08	4	5.75	0.08	4	9166.480

Table 1—Continued

ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
901	5	29	40	-68	51	31	10.64	0.02	2	10.13	0.07	2	9.39	0.12	2	
902	5	29	42	-68	56	58	8.09	0.20	2	0.00	0.00	0	8.09	0.82	2	
903	5	29	42	-68	57	16	7.88	0.04	2	7.32	0.04	2	6.96	0.03	2	9162.820
904	5	29	44	-69	5	49	9.04	0.01	2	8.39	0.00	2	7.84	0.05	4	9162.303
905	5	29	46	-68	37	3	10.00	0.06	4	9.13	0.10	4	8.77	0.10	4	
906	5	29	50	-69	48	12	11.52	0.10	2	10.68	0.04	2	9.30	0.10	2	
907	5	29	53	-70	8	37	10.62	0.02	4	9.83	0.04	4	9.39	0.02	4	9166.324
908	5	29	55	-69	4	14	9.45	0.01	2	8.88	0.05	2	8.47	0.01	4	9162.364
909	5	29	57	-68	14	47	7.58	0.03	4	6.83	0.01	4	6.79	0.01	4	9162.146
910	5	29	58	-68	55	19	9.31	0.03	2	8.87	0.05	2	8.50	0.07	2	9162.184
911	5	29	58	-67	44	24	8.65	0.02	4	8.88	0.67	4	8.21	0.06	4	9162.168
912	5	30	0	-68	14	35	7.64	0.00	2	6.83	0.01	2	6.78	0.00	2	
913	5	30	0	-69	37	58	11.76	0.07	2	10.80	0.09	2	9.47	0.03	2	
914	5	30	1	-69	58	35	6.34	0.02	4	5.33	0.04	4	5.16	0.04	4	9166.29
915	5	30	1	-69	56	35	10.90	0.01	2	9.96	0.00	2	9.22	0.10	2	9166.760
916	5	30	1	-69	28	37	10.21	0.07	4	9.63	0.03	4	9.29	0.05	4	
917	5	30	3	-68	46	4	9.57	0.04	6	8.78	0.06	6	8.39	0.07	6	9162.974
918	5	30	4	-69	47	0	8.46	0.01	2	8.28	0.02	2	8.19	0.10	4	9166.583
919	5	30	4	-69	2	37	10.05	0.04	2	9.47	0.03	2	9.09	0.10	4	
920	5	30	4	-68	47	28	9.85	0.04	4	9.20	0.09	4	8.75	0.03	4	9162.411
921	5	30	5	-69	3	59	9.94	0.04	2	9.32	0.09	2	9.09	0.09	4	9162.967
922	5	30	9	-69	11	3	9.99	0.07	4	9.15	0.02	4	8.61	0.03	4	
923	5	30	10	-69	45	9	10.05	0.00	2	9.47	0.00	2	9.27	0.05	2	9166.122
924	5	30	16	-70	49	43	7.07	0.01	4	6.47	0.08	4	6.36	0.02	4	9166.704
925	5	30	18	-67	56	16	8.58	0.15	4	8.05	0.09	4	7.97	0.07	4	9162.395
926	5	30	25	-70	6	36	10.84	0.01	2	10.09	0.06	2	9.31	0.06	2	9166.538
927	5	30	26	-69	30	25	9.52	0.03	4	8.92	0.03	4	8.64	0.13	4	9166.850
928	5	30	28	-70	11	35	7.63	0.00	2	6.97	0.01	2	6.74	0.09	2	9166.13
929	5	30	28	-69	20	54	11.12	0.01	2	10.09	0.03	2	9.22	0.02	2	
930	5	30	29	-68	6	24	8.09	0.01	2	7.57	0.01	2	7.56	0.07	2	9162.307
931	5	30	32	-70	6	32	10.77	0.05	2	10.48	0.01	2	9.60	0.19	2	
932	5	30	33	-68	0	33	9.07	0.00	2	8.35	0.01	2	8.33	0.01	2	9162.704
933	5	30	33	-70	1	39	10.86	0.04	2	9.82	0.04	2	9.32	0.06	2	
934	5	30	35	-68	59	23	8.70	0.02	2	7.98	0.05	2	7.64	0.07	2	9162.1056
935	5	30	36	-69	7	8	10.41	0.01	2	9.42	0.00	2	8.92	0.08	6	9162.48
936	5	30	38	-69	51	3	11.55	0.00	2	10.58	0.04	2	9.55	0.01	2	

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
937	5	30	38	-69	0	52	10.40	0.06	2	9.68	0.02	2	9.09	0.04	2	
938	5	30	41	-69	15	33	9.09	0.05	4	8.43	0.01	4	7.86	0.05	4	9162.23
939	5	30	42	-69	5	21	9.83	0.00	2	9.11	0.01	2	8.89	0.08	6	
940	5	30	42	-69	39	7	10.40	0.04	2	9.86	0.01	2	9.40	0.08	2	9166.210
941	5	30	45	-70	55	13	7.31	0.01	6	6.96	0.05	6	7.01	0.01	6	9166.625
942	5	30	49	-70	17	13	8.75	0.00	2	8.07	0.02	2	7.86	0.01	2	9166.157
943	5	30	51	-70	55	26	9.25	0.04	4	8.41	0.06	4	8.04	0.02	4	
944	5	30	51	-70	41	50	10.20	0.02	4	9.34	0.05	4	8.79	0.01	4	
945	5	30	52	-69	2	57	8.55	0.02	2	8.33	0.05	2	8.51	0.14	4	9162.419
946	5	30	52	-69	25	41	10.28	0.00	2	9.51	0.05	2	8.88	0.01	2	9166.709
947	5	30	55	-69	58	45	8.78	0.01	3	8.28	0.03	4	8.11	0.01	4	9166.350
948	5	30	56	-69	27	4	10.33	0.09	4	9.81	0.06	4	9.40	0.08	4	
949	5	30	57	-69	18	40	10.69	0.07	4	9.95	0.05	4	9.35	0.13	4	
950	5	31	0	-69	10	45	8.92	0.05	10	8.26	0.02	10	7.74	0.01	12	9162.991
951	5	31	2	-69	12	6	10.51	0.07	4	9.65	0.03	4	9.03	0.10	4	
952	5	31	3	-68	25	22	9.52	0.11	4	9.16	0.04	4	8.92	0.07	4	9162.403
953	5	31	3	-69	5	39	10.66	0.97	4	8.97	0.06	4	8.68	0.06	6	9162.567
954	5	31	4	-69	19	2	8.82	0.07	6	8.16	0.03	6	7.59	0.05	6	
955	5	31	5	-68	59	58	10.29	0.01	2	9.53	0.01	2	9.47	0.05	2	9162.518
956	5	31	7	-68	6	41	9.50	0.00	2	9.28	0.04	2	8.95	0.14	2	9162.36
957	5	31	9	-67	25	56	0.00	0.00	0	0.00	0.00	0	7.84	0.05	2	8891.3279
958	5	31	15	-69	27	46	9.36	0.01	2	8.96	0.05	2	8.75	0.01	2	9166.123
959	5	31	15	-69	3	58	9.35	0.07	3	8.73	0.10	4	8.24	0.10	6	
960	5	31	15	-69	2	52	10.67	0.06	2	9.83	0.05	2	9.40	0.14	2	
961	5	31	16	-67	54	25	9.14	0.01	2	8.48	0.03	2	8.20	0.06	2	9162.527
962	5	31	18	-68	44	1	9.73	0.04	4	8.95	0.04	4	8.66	0.08	4	9162.508
963	5	31	18	-69	9	28	9.73	0.03	4	8.95	0.06	4	8.65	0.10	6	
964	5	31	23	-70	46	17	12.06	0.03	2	11.18	0.07	2	9.54	0.04	2	
965	5	31	24	-68	41	35	9.85	0.06	3	9.08	0.06	3	8.80	0.03	4	9162.1007
966	5	31	25	-69	21	17	9.77	0.07	6	9.05	0.05	6	8.65	0.07	6	9162.735
967	5	31	29	-70	49	10	11.87	0.01	2	10.75	0.19	2	9.50	0.11	2	
968	5	31	31	-69	10	27	9.92	0.01	2	9.34	0.01	2	8.82	0.06	4	9162.10
969	5	31	33	-68	27	25	10.48	0.02	4	9.54	0.03	4	9.05	0.08	4	
970	5	31	34	-67	24	52	10.06	0.01	2	9.27	0.00	1	9.00	0.07	2	
971	5	31	36	-70	15	31	9.49	0.01	2	9.03	0.02	2	8.87	0.03	2	9166.371
972	5	31	38	-67	28	11	9.73	0.01	2	9.34	0.02	2	9.13	0.12	2	8891.3435

Table 1—Continued

ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
973	5	31	41	-71	11	29	9.35	0.02	2	8.96	0.16	2	8.67	0.08	2	9166.909
974	5	31	55	-69	14	55	10.09	0.07	6	9.55	0.09	6	9.13	0.07	6	9162.69
975	5	31	56	-70	9	35	9.78	0.01	2	9.26	0.03	2	8.77	0.25	2	9166.448
976	5	31	58	-67	48	55	7.98	0.00	2	7.23	0.00	2	7.09	0.03	2	9162.162
977	5	31	58	-69	13	52	9.91	0.05	6	9.28	0.04	5	8.78	0.05	6	
978	5	31	59	-69	9	40	7.51	0.00	2	6.97	0.04	4	6.85	0.03	6	9162.610
979	5	32	0	-67	51	50	11.78	0.03	2	10.65	0.04	2	9.35	0.01	2	
980	5	32	3	-69	45	45	9.71	0.00	2	9.09	0.05	3	8.49	0.07	4	9166.343
981	5	32	4	-70	36	32	9.43	0.01	4	8.68	0.03	4	8.46	0.06	4	9166.744
982	5	32	5	-67	31	47	10.41	0.01	2	9.41	0.01	2	9.08	0.12	2	9162.192
983	5	32	7	-70	32	4	9.27	0.11	4	8.92	0.04	4	8.97	0.10	4	9166.389
984	5	32	9	-69	0	59	9.96	0.06	4	9.62	0.10	4	9.22	0.09	4	9162.729
985	5	32	12	-67	59	15	9.14	0.00	2	8.47	0.00	2	8.33	0.09	2	9162.91
986	5	32	18	-69	15	3	10.28	0.05	4	9.68	0.06	4	8.93	0.06	4	9162.388
987	5	32	18	-67	31	45	9.87	0.01	2	9.02	0.04	2	8.54	0.04	2	9162.155
988	5	32	19	-70	45	8	10.83	0.01	2	9.97	0.01	2	9.45	0.05	2	
989	5	32	19	-67	31	17	9.31	0.01	2	8.55	0.02	2	8.27	0.03	2	9162.156
990	5	32	19	-70	48	40	9.94	0.00	2	9.18	0.00	2	9.14	0.06	2	9166.689
991	5	32	20	-67	32	41	9.12	0.01	2	8.34	0.02	2	7.89	0.02	2	9162.13
992	5	32	20	-69	15	59	9.84	0.04	4	9.26	0.03	4	8.73	0.04	4	
993	5	32	25	-67	41	52	8.32	0.01	2	7.84	0.04	2	7.68	0.01	2	9162.123
994	5	32	27	-69	16	52	9.05	0.03	4	8.46	0.01	4	8.12	0.06	4	9162.1034
995	5	32	28	-67	45	46	7.61	0.01	2	6.69	0.01	2	6.49	0.05	2	9162.589
996	5	32	29	-69	13	5	8.69	0.00	2	8.58	0.00	2	8.74	0.08	4	9162.234
997	5	32	31	-68	4	54	9.54	0.02	4	8.89	0.03	4	8.62	0.07	4	9162.8
998	5	32	31	-69	20	25	9.73	0.06	4	9.05	0.04	4	8.57	0.02	4	9162.558
999	5	32	35	-69	7	51	9.21	0.01	4	8.57	0.05	4	8.22	0.04	6	9162.569
1000	5	32	35	-67	55	8	8.93	0.01	2	8.15	0.01	2	7.43	0.01	2	
1001	5	32	39	-69	59	0	10.94	0.00	2	10.19	0.06	2	9.40	0.10	2	
1002	5	32	43	-70	41	29	9.36	0.00	2	8.99	0.02	2	9.01	0.05	2	9166.668
1003	5	32	44	-69	16	10	10.43	0.02	2	9.76	0.02	2	9.30	0.03	2	
1004	5	32	50	-67	27	45	9.39	0.00	2	8.45	0.00	2	8.11	0.03	2	8891.3302
1005	5	32	56	-68	12	47	11.96	0.03	4	10.47	0.11	4	9.18	0.10	4	
1006	5	32	59	-68	35	55	8.78	0.00	2	7.93	0.05	2	7.66	0.01	2	9162.254
1007	5	33	0	-69	36	28	10.18	0.10	4	9.28	0.03	4	8.73	0.05	4	
1008	5	33	0	-69	18	21	10.28	0.03	2	9.40	0.05	2	9.19	0.01	2	

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
1009	5	33	3	-69	9	14	10.56	0.01	2	9.93	0.03	2	9.50	0.07	2	
1010	5	33	4	-69	19	40	10.12	0.05	4	9.45	0.02	4	9.06	0.10	4	
1011	5	33	4	-70	48	33	10.22	0.00	2	9.27	0.01	2	9.01	0.08	2	
1012	5	33	6	-68	15	36	8.49	0.02	4	7.90	0.05	4	7.90	0.02	4	9162.445
1013	5	33	8	-68	6	25	9.65	0.01	2	8.99	0.04	2	8.94	0.01	2	9162.709
1014	5	33	11	-68	52	55	10.48	0.04	4	9.71	0.04	4	9.26	0.06	4	
1015	5	33	13	-69	11	42	0.00	0.00	0	0.00	0.00	0	9.52	0.06	2	9162.598
1016	5	33	13	-70	0	39	10.40	0.02	2	9.60	0.01	2	9.21	0.11	2	9166.537
1017	5	33	15	-68	34	37	8.56	0.01	2	7.96	0.00	2	7.75	0.03	2	9162.320
1018	5	33	20	-67	30	30	8.96	0.00	2	8.09	0.03	2	7.79	0.03	2	9162.625
1019	5	33	22	-69	40	55	9.75	0.03	4	9.08	0.03	4	8.89	0.03	4	9166.546
1020	5	33	26	-68	59	55	10.42	0.00	2	9.65	0.02	2	9.09	0.09	2	
1021	5	33	28	-68	50	33	11.14	0.01	2	10.41	0.03	2	9.40	0.09	2	
1022	5	33	29	-67	31	37	10.12	0.01	2	9.07	0.00	2	9.02	0.05	2	9162.962
1023	5	33	29	-67	41	3	10.66	0.01	2	9.81	0.05	2	9.15	0.02	2	
1024	5	33	34	-68	46	10	10.11	0.01	2	9.68	0.06	2	9.20	0.03	2	9162.404
1025	5	33	37	-69	11	54	10.56	0.02	2	10.00	0.05	2	9.12	0.04	2	
1026	5	33	38	-69	10	14	10.28	0.01	2	9.69	0.04	2	9.13	0.02	2	
1027	5	33	39	-69	10	54	10.16	0.00	2	9.60	0.02	2	8.85	0.07	4	
1028	5	33	39	-67	43	29	10.77	0.01	2	9.84	0.04	2	9.26	0.04	2	
1029	5	33	41	-69	18	54	10.02	0.01	4	9.34	0.02	4	8.96	0.08	6	
1030	5	33	42	-70	6	57	9.43	0.01	2	8.59	0.01	2	8.39	0.01	2	9166.678
1031	5	33	42	-70	59	22	10.31	0.00	2	9.43	0.02	2	9.18	0.14	2	9166.896
1032	5	33	46	-70	28	55	9.97	0.00	2	9.37	0.02	2	9.48	0.06	2	9166.720
1033	5	33	46	-68	43	0	10.61	0.04	4	9.69	0.07	4	9.06	0.12	4	
1034	5	33	52	-69	46	46	8.93	0.01	2	8.43	0.04	2	8.16	0.14	4	9166.247
1035	5	33	51	-67	56	20	8.11	0.01	2	7.71	0.03	2	7.83	0.04	4	9162.428
1036	5	33	52	-69	11	13	8.87	0.02	2	8.32	0.02	2	7.74	0.06	4	
1037	5	33	59	-69	9	51	10.43	0.00	2	9.67	0.02	2	9.32	0.11	2	
1038	5	34	2	-68	51	41	10.50	0.02	2	9.73	0.01	2	9.56	0.03	2	
1039	5	34	4	-69	20	48	10.78	0.01	2	10.17	0.04	2	9.15	0.08	2	
1040	5	34	10	-69	16	32	10.88	0.14	4	10.26	0.04	2	9.31	0.05	4	
1041	5	34	14	-68	58	44	9.49	0.00	2	10.16	0.77	4	8.20	0.14	4	
1042	5	34	14	-69	2	41	10.25	0.00	2	9.60	0.02	2	9.14	0.05	2	9162.575
1043	5	34	17	-69	13	10	11.15	1.24	3	9.84	0.05	2	9.27	0.05	4	9162.522
1044	5	34	18	-69	2	17	10.54	0.02	2	9.92	0.00	2	9.38	0.05	2	

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
1045	5	34	20	-68	59	40	9.69	0.01	2	8.98	0.04	2	8.93	0.12	4	
1046	5	34	21	-69	22	0	9.87	0.04	6	8.90	0.24	6	8.92	0.09	6	9162.306
1047	5	34	25	-69	23	34	9.21	0.06	6	8.52	0.02	6	8.11	0.07	6	9166.351
1048	5	34	26	-69	21	46	8.29	0.06	6	7.68	0.02	6	7.37	0.02	6	9162.229
1049	5	34	29	-68	0	47	8.33	0.05	4	7.69	0.07	4	7.47	0.07	4	9162.252
1050	5	34	30	-69	7	51	10.16	0.02	2	9.52	0.02	2	9.09	0.05	4	
1051	5	34	30	-68	40	43	9.03	0.35	5	8.03	0.04	6	7.65	0.03	6	9162.239
1052	5	34	32	-70	29	44	9.60	0.00	2	9.16	0.00	2	9.29	0.01	2	9166.677
1053	5	34	34	-69	46	6	9.63	0.02	2	9.07	0.01	2	8.87	0.06	4	9166.339
1054	5	34	33	-68	40	41	10.28	0.00	1	8.14	0.02	2	7.71	0.02	2	
1055	5	34	34	-69	15	1	9.41	0.08	4	8.66	0.02	4	8.13	0.04	6	9162.426
1056	5	34	38	-69	14	56	10.53	0.07	4	9.74	0.01	4	9.01	0.03	4	
1057	5	34	39	-68	12	20	6.44	0.07	4	5.34	0.05	4	5.26	0.03	4	9162.64
1058	5	34	40	-70	56	18	7.56	0.03	4	7.15	0.03	4	7.09	0.03	4	9166.231
1059	5	34	43	-69	12	23	10.41	0.08	4	9.63	0.05	4	9.13	0.15	4	
1060	5	34	43	-69	28	19	8.53	0.08	6	8.64	0.03	6	8.77	0.02	6	9166.130
1061	5	34	45	-69	4	6	10.07	0.02	2	9.35	0.02	2	8.86	0.06	4	
1062	5	34	46	-69	38	44	9.09	0.01	2	8.28	0.02	2	8.21	0.04	2	9166.150
1063	5	34	47	-70	10	17	6.57	0.00	2	5.81	0.02	4	5.51	0.09	4	9166.236
1064	5	34	47	-69	29	1	9.67	0.07	4	8.95	0.03	4	8.54	0.09	4	9166.835
1065	5	34	50	-69	19	47	10.90	0.02	2	10.15	0.01	2	9.45	0.10	2	
1066	5	34	52	-71	0	25	11.48	0.03	2	10.40	0.16	2	9.07	0.09	2	
1067	5	34	54	-68	46	38	7.42	0.02	4	6.58	0.06	4	6.47	0.06	6	9162.512
1068	5	34	53	-69	8	0	10.37	0.01	2	9.83	0.00	2	9.28	0.07	2	
1069	5	34	54	-69	11	7	10.73	0.01	2	9.85	0.01	2	9.33	0.08	2	
1070	5	34	57	-69	20	41	10.51	0.01	2	9.79	0.04	2	9.17	0.07	2	
1071	5	35	0	-69	12	33	10.55	0.04	4	9.77	0.03	4	8.98	0.03	4	
1072	5	35	3	-68	18	36	8.35	0.01	2	7.60	0.03	2	7.60	0.00	2	9162.754
1073	5	35	4	-69	57	17	11.53	0.03	2	10.31	0.03	2	9.25	0.08	2	
1074	5	35	7	-69	5	17	11.46	0.04	2	10.67	0.02	2	9.32	0.20	2	
1075	5	35	14	-67	43	56	9.44	0.04	4	9.17	0.56	3	8.27	0.04	4	
1076	5	35	14	-71	8	18	0.00	0.00	0	0.00	0.00	0	4.22	0.01	2	9166.810
1077	5	35	16	-69	40	36	9.91	0.03	2	9.68	0.03	2	9.03	0.06	2	9166.86
1078	5	35	18	-69	16	30	10.76	0.02	2	10.02	0.03	2	9.42	0.07	2	
1079	5	35	21	-69	42	44	9.52	0.03	2	8.69	0.02	2	8.09	0.01	2	9166.846
1080	5	35	21	-69	13	37	10.17	0.06	4	9.29	0.03	4	8.87	0.08	6	9162.2

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
1081	5	35	23	-69	2	21	10.00	0.02	2	9.23	0.01	2	8.88	0.07	4	
1082	5	35	25	-69	4	1	9.62	0.01	2	8.78	0.05	2	8.33	0.04	4	
1083	5	35	26	-69	27	59	9.56	0.07	4	8.79	0.03	4	8.53	0.03	4	9166.229
1084	5	35	31	-70	30	16	9.23	0.04	4	8.79	0.02	4	9.06	0.09	4	9166.106
1085	5	35	31	-68	33	53	7.90	0.10	4	7.41	0.06	4	7.20	0.03	4	9162.323
1086	5	35	33	-69	4	15	9.54	0.01	2	8.70	0.01	2	8.33	0.13	4	
1087	5	35	32	-68	19	30	10.51	0.03	2	9.80	0.04	2	9.47	0.09	2	
1088	5	35	38	-67	52	7	8.43	0.11	4	8.20	0.02	4	8.29	0.12	4	9162.95
1089	5	35	41	-69	11	58	9.47	0.05	4	8.65	0.01	4	7.95	0.03	6	9162.711
1090	5	35	43	-67	49	28	9.98	0.05	4	9.21	0.09	4	9.14	0.06	4	9162.1030
1091	5	35	43	-70	0	3	11.05	0.01	2	10.27	0.09	2	9.50	0.07	2	
1092	5	35	44	-67	43	14	8.33	0.02	4	7.52	0.02	4	7.34	0.07	4	9162.242
1093	5	35	44	-68	51	19	9.04	0.01	2	8.30	0.01	2	7.97	0.03	2	9162.54
1094	5	35	44	-69	2	39	9.59	0.02	2	9.30	0.06	2	9.09	0.02	2	9162.382
1095	5	35	47	-71	6	7	8.87	0.11	4	8.47	0.02	4	8.54	0.10	4	9166.815
1096	5	35	47	-69	4	56	10.03	0.07	4	9.02	0.08	4	8.52	0.07	6	
1097	5	35	47	-68	17	46	8.90	0.00	2	8.49	0.01	2	8.47	0.08	2	9162.34
1098	5	35	49	-68	22	10	0.00	0.00	0	9.57	0.04	2	9.21	0.06	2	9162.238
1099	5	35	50	-67	36	34	9.70	0.06	4	8.75	0.02	2	8.20	0.01	4	9162.418
1100	5	35	50	-69	37	5	9.64	0.04	2	8.65	0.02	2	8.19	0.03	2	
1101	5	35	50	-69	29	17	7.76	0.08	4	7.30	0.06	4	7.42	0.05	4	9166.15
1102	5	35	52	-69	22	26	9.51	0.07	4	8.78	0.06	4	8.53	0.03	4	9162.336
1103	5	35	55	-69	9	59	8.58	0.05	4	8.54	0.86	5	7.01	0.04	6	9162.247
1104	5	35	56	-69	17	51	10.38	0.45	5	9.35	0.12	6	8.53	0.08	6	9162.577
1105	5	35	59	-67	56	15	10.32	0.02	2	9.68	0.02	2	9.42	0.09	2	9162.202
1106	5	36	0	-67	37	39	8.58	0.04	4	7.93	0.00	4	7.75	0.02	4	9163.442
1107	5	36	2	-70	35	18	9.84	0.02	2	9.16	0.01	2	9.20	0.14	2	9167.621
1108	5	36	3	-69	40	18	10.70	0.00	2	9.96	0.02	2	9.03	0.01	2	
1109	5	36	6	-68	56	38	9.54	0.01	2	8.76	0.02	2	8.55	0.07	2	9163.666
1110	5	36	8	-69	12	34	10.02	0.07	6	9.34	0.09	6	8.74	0.09	6	
1111	5	36	9	-69	10	36	9.88	0.06	5	9.19	0.06	6	8.53	0.05	6	
1112	5	36	10	-68	55	40	9.54	0.01	2	9.12	0.06	2	9.09	0.02	2	9163.560
1113	5	36	10	-68	54	38	9.21	0.01	2	8.44	0.02	2	7.83	0.05	2	9163.602
1114	5	36	11	-69	11	44	9.86	0.07	6	9.26	0.02	6	8.86	0.07	6	9163.417
1115	5	36	12	-69	12	14	10.54	0.08	4	9.71	0.01	4	9.16	0.03	4	
1116	5	36	12	-69	0	28	10.43	0.01	2	9.51	0.00	2	9.06	0.04	2	

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
1117	5	36	15	-70	4	50	9.66	0.10	4	9.32	0.04	4	9.28	0.03	4	9167.652
1118	5	36	20	-68	56	17	9.80	0.02	2	8.92	0.02	2	8.33	0.06	2	
1119	5	36	21	-69	20	55	10.59	0.02	2	10.02	0.07	2	9.26	0.03	2	
1120	5	36	23	-69	59	54	10.14	0.02	2	9.64	0.01	2	9.35	0.01	2	9167.733
1121	5	36	26	-69	22	55	10.11	0.03	4	9.83	0.01	4	8.66	0.08	4	9167.518
1122	5	36	26	-69	19	27	10.04	0.07	6	9.14	0.06	6	8.69	0.03	6	9163.696
1123	5	36	27	-69	23	50	8.58	0.03	4	8.11	0.01	4	7.88	0.02	4	9167.807
1124	5	36	27	-68	54	16	9.78	0.00	2	8.95	0.02	2	8.69	0.01	2	9163.935
1125	5	36	27	-70	17	45	9.53	0.02	2	9.12	0.05	2	9.38	0.01	2	9167.391
1126	5	36	28	-69	4	51	0.00	0.00	0	9.94	0.00	1	9.24	0.15	2	
1127	5	36	31	-70	37	52	9.55	0.05	4	8.82	0.06	4	8.69	0.09	4	9167.707
1128	5	36	32	-69	50	6	10.81	0.04	2	9.70	0.02	2	9.27	0.02	2	
1129	5	36	32	-68	54	1	9.66	0.01	2	9.34	0.00	2	9.20	0.08	2	9163.497
1130	5	36	34	-67	31	7	9.30	0.00	2	8.61	0.03	2	8.32	0.06	2	9163.575
1131	5	36	40	-69	23	14	9.76	0.09	4	9.09	0.05	4	8.78	0.06	4	9167.510
1132	5	36	41	-69	14	7	10.60	0.04	6	9.64	0.04	6	8.82	0.10	6	
1133	5	36	41	-68	46	7	9.71	0.04	4	9.14	0.03	4	9.16	0.09	4	9163.779
1134	5	36	43	-69	29	45	8.50	0.00	2	8.36	0.05	2	8.23	0.06	2	9167.730
1135	5	36	45	-69	14	23	11.00	0.02	4	10.18	0.07	4	9.22	0.33	4	
1136	5	36	46	-69	45	33	10.65	0.03	2	9.76	0.02	2	9.15	0.04	2	
1137	5	36	47	-69	10	8	10.35	0.01	2	9.44	0.01	2	9.22	0.13	2	
1138	5	36	48	-69	16	42	10.39	0.06	6	9.65	0.05	6	9.09	0.08	6	
1139	5	36	48	-69	14	33	9.89	0.04	6	9.00	0.04	6	8.45	0.05	6	
1140	5	36	49	-69	27	36	10.69	0.00	2	9.86	0.09	2	9.28	0.00	2	9167.495
1141	5	36	49	-68	36	38	9.42	0.01	2	8.77	0.00	2	8.60	0.02	2	9163.911
1142	5	36	50	-69	46	38	10.20	0.06	2	9.57	0.03	2	8.91	0.05	2	9167.413
1143	5	36	51	-68	46	40	8.12	0.01	4	7.51	0.02	4	7.43	0.03	4	9163.808
1144	5	36	52	-68	7	54	8.88	0.01	2	8.15	0.00	2	8.00	0.12	2	9163.518
1145	5	36	54	-68	51	57	8.66	0.02	2	8.09	0.03	2	7.94	0.05	4	9163.701
1146	5	37	3	-70	3	34	7.70	0.01	2	7.00	0.02	2	6.56	0.02	2	9167.751
1147	5	37	8	-70	48	21	10.12	0.03	2	9.60	0.01	2	9.23	0.07	2	9167.353
1148	5	37	9	-68	26	41	10.15	0.02	2	9.37	0.05	2	8.91	0.01	2	
1149	5	37	9	-67	33	13	11.94	0.02	2	10.60	0.05	2	9.30	0.03	2	
1150	5	37	11	-69	11	36	10.69	0.08	3	9.67	0.03	2	9.25	0.04	4	
1151	5	37	13	-69	8	34	9.71	0.07	4	8.85	0.07	4	8.41	0.03	6	
1152	5	37	20	-69	19	37	9.18	0.02	6	8.46	0.04	6	8.04	0.10	6	9163.477

Table 1—Continued

ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
1153	5	37	21	-68	34	53	10.43	0.00	2	9.46	0.03	2	9.21	0.05	2	9163.771
1154	5	37	23	-69	19	26	9.09	0.05	6	8.35	0.04	6	7.97	0.05	6	9163.556
1155	5	37	26	-68	43	45	8.77	0.03	4	8.40	0.05	4	8.55	0.12	4	9163.569
1156	5	37	26	-68	47	41	9.56	0.04	4	8.76	0.02	4	8.33	0.07	4	9163.454
1157	5	37	27	-70	41	12	7.17	0.06	3	6.36	0.01	4	6.21	0.04	4	9167.728
1158	5	37	30	-69	2	31	9.91	0.11	4	9.16	0.05	4	8.78	0.09	4	
1159	5	37	35	-68	25	54	8.98	0.13	4	8.86	0.02	2	8.80	0.08	4	9163.629
1160	5	37	36	-69	12	29	10.25	0.05	5	9.37	0.07	4	9.10	0.09	6	9163.681
1161	5	37	36	-70	25	8	7.49	0.02	2	7.22	0.06	2	7.14	0.06	2	9167.467
1162	5	37	37	-69	45	48	10.11	0.00	2	9.47	0.06	3	8.91	0.13	4	9167.681
1163	5	37	37	-69	29	22	9.37	0.00	2	8.68	0.04	2	8.48	0.00	2	
1164	5	37	43	-69	24	59	9.04	0.00	2	8.21	0.05	2	7.73	0.04	2	9167.673
1165	5	37	45	-69	20	48	8.87	0.04	4	8.20	0.03	4	7.66	0.04	4	9163.976
1166	5	37	46	-69	34	47	11.05	0.01	2	10.35	0.08	2	9.56	0.13	2	
1167	5	37	47	-68	36	21	10.25	0.01	2	9.25	0.02	2	8.70	0.05	2	
1168	5	37	47	-69	25	14	10.29	0.01	2	9.65	0.05	2	9.06	0.13	2	
1169	5	37	49	-69	19	3	10.11	0.07	4	9.20	0.04	4	8.76	0.04	4	
1170	5	37	50	-68	16	24	9.14	0.05	6	8.47	0.06	6	8.42	0.05	6	9163.474
1171	5	37	50	-69	4	22	9.88	0.00	2	9.67	0.00	2	9.37	0.11	2	9163.942
1172	5	37	54	-69	9	0	10.12	0.06	4	9.62	0.07	4	9.12	0.06	6	
1173	5	37	58	-69	57	29	6.80	0.07	4	6.52	0.04	4	6.66	0.17	4	9167.706
1174	5	37	59	-69	14	23	9.56	0.04	4	10.49	1.58	4	8.44	0.01	4	9163.872
1175	5	38	3	-69	28	11	9.43	0.03	2	8.96	0.01	2	8.85	0.05	2	9167.298
1176	5	38	4	-68	45	43	9.39	0.01	2	9.09	0.03	2	8.96	0.09	2	9163.459
1177	5	38	7	-69	17	28	9.33	0.03	4	8.54	0.04	4	7.90	0.04	4	
1178	5	38	6	-69	3	44	10.56	0.05	4	9.84	0.04	4	9.18	0.04	4	
1179	5	38	6	-69	28	45	10.22	0.02	2	9.41	0.01	2	9.08	0.05	2	
1180	5	38	8	-70	27	53	8.21	0.08	4	7.50	0.03	4	7.37	0.07	4	9167.651
1181	5	38	7	-69	16	24	9.48	0.04	4	8.74	0.04	4	8.13	0.02	4	9163.930
1182	5	38	7	-68	26	38	9.19	0.00	2	8.78	0.04	2	8.64	0.09	2	9163.851
1183	5	38	9	-69	6	22	9.36	0.08	4	9.08	0.11	4	8.72	0.08	4	9163.1002
1184	5	38	9	-70	0	7	7.96	0.02	2	7.01	0.05	2	6.86	0.07	2	9167.740
1185	5	38	12	-69	16	18	10.47	0.04	4	9.53	0.04	4	9.05	0.09	4	
1186	5	38	16	-69	23	31	8.98	0.06	4	8.38	0.03	4	8.21	0.05	4	9167.599
1187	5	38	16	-69	10	10	8.99	0.07	4	8.34	0.05	4	7.86	0.04	6	
1188	5	38	17	-69	4	11	8.99	0.06	6	8.37	0.06	6	7.98	0.01	6	9163.994

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
1189	5	38	18	-69	17	40	9.60	0.03	4	8.76	0.03	4	8.28	0.10	4	
1190	5	38	19	-69	51	32	7.78	0.05	4	6.97	0.03	4	6.77	0.10	4	9167.630
1191	5	38	19	-70	18	33	9.66	0.07	2	8.93	0.08	2	8.85	0.07	2	9167.324
1192	5	38	20	-69	37	33	7.54	0.14	4	6.81	0.09	4	6.40	0.08	4	
1193	5	38	26	-69	22	42	10.04	0.03	4	9.27	0.03	4	8.86	0.02	4	9167.797
1194	5	38	26	-67	51	42	11.29	0.01	2	10.32	0.06	2	9.41	0.03	2	
1195	5	38	27	-69	8	51	9.68	0.00	2	9.24	0.05	2	8.46	0.06	4	
1196	5	38	27	-70	44	34	8.28	0.01	2	7.62	0.03	2	7.45	0.03	2	9167.509
1197	5	38	34	-69	20	31	9.22	0.01	4	8.60	0.03	4	7.67	0.02	4	9163.1001
1198	5	38	34	-68	53	6	8.90	0.03	6	8.44	0.06	6	8.37	0.04	6	9163.729
1199	5	38	34	-69	34	40	9.67	0.04	2	8.91	0.04	2	8.41	0.04	2	
1200	5	38	40	-68	28	11	10.26	0.03	2	9.29	0.05	2	9.13	0.06	2	
1201	5	38	42	-69	6	3	8.39	0.01	2	8.40	0.02	2	7.99	0.02	2	9163.1014
1202	5	38	43	-69	17	1	9.18	0.01	4	8.86	0.02	4	8.77	0.02	4	9163.475
1203	5	38	48	-69	5	32	9.22	0.01	2	8.63	0.06	2	7.85	0.08	2	
1204	5	38	49	-69	27	5	8.13	0.42	5	6.72	0.03	4	6.47	0.03	6	9167.381
1205	5	38	49	-69	26	39	9.17	0.01	2	6.71	0.06	2	6.56	0.00	2	
1206	5	38	49	-69	44	27	8.41	0.08	4	8.22	0.04	4	8.37	0.10	6	9167.452
1207	5	38	51	-69	29	53	9.81	0.01	2	9.70	0.00	2	9.43	0.06	2	9167.497
1208	5	38	55	-70	35	25	10.09	0.01	2	9.54	0.03	2	9.65	0.12	2	9167.407
1209	5	38	56	-69	16	10	10.86	0.12	2	10.23	0.05	2	9.59	0.12	2	
1210	5	39	0	-68	25	10	10.07	0.01	2	9.19	0.04	2	8.68	0.02	2	
1211	5	39	4	-69	36	4	9.52	0.10	4	8.70	0.06	4	8.18	0.01	4	
1212	5	39	4	-69	13	32	0.00	0.00	0	0.00	0.00	0	9.09	0.00	2	9163.638
1213	5	39	12	-70	38	31	11.90	0.01	2	11.25	0.03	2	9.57	0.02	2	
1214	5	39	26	-69	11	36	9.01	0.00	2	8.50	0.05	2	8.34	0.08	4	9163.748
1215	5	39	27	-70	7	55	12.40	0.04	2	11.60	0.22	2	9.58	0.11	2	
1216	5	39	29	-69	57	13	9.62	0.03	2	9.21	0.02	2	9.50	0.13	2	9167.574
1217	5	39	31	-69	16	16	9.99	0.03	2	9.37	0.04	2	8.73	0.10	6	
1218	5	39	32	-69	34	49	8.45	0.10	4	7.75	0.05	4	7.16	0.06	4	9167.834
1219	5	39	32	-70	4	47	9.89	0.03	2	9.23	0.01	2	9.36	0.04	2	9167.333
1220	5	39	39	-68	56	49	8.52	0.24	4	7.21	0.01	4	7.16	0.08	4	9163.813
1221	5	39	39	-69	11	49	9.15	0.02	2	8.56	0.03	2	7.96	0.02	4	
1222	5	39	41	-69	11	31	9.54	0.37	2	8.56	0.03	2	8.44	0.02	2	
1223	5	39	44	-67	37	8	9.12	0.01	2	8.43	0.00	2	8.42	0.02	2	9163.716
1224	5	39	46	-69	19	26	9.76	0.03	6	8.89	0.02	6	8.44	0.03	6	

Table 1—Continued

ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
1225	5	39	52	-69	9	39	10.71	0.01	2	9.79	0.12	2	9.28	0.08	2	
1226	5	39	53	-69	17	55	9.94	0.04	5	9.72	0.53	5	8.72	0.05	6	9163.550
1227	5	40	3	-69	22	45	9.92	0.05	6	9.13	0.02	6	8.64	0.05	6	9167.338
1228	5	40	5	-68	9	22	10.89	0.19	2	9.89	0.01	2	9.23	0.15	2	
1229	5	40	6	-68	44	26	9.22	0.03	4	8.75	0.04	4	8.89	0.09	4	9163.866
1230	5	40	6	-69	16	24	10.39	0.05	2	9.87	0.01	2	9.25	0.07	2	
1231	5	40	7	-69	20	4	9.56	0.07	6	9.00	0.08	6	8.31	0.06	6	
1232	5	40	11	-69	22	38	9.99	0.07	12	9.45	0.10	12	8.59	0.07	12	9167.408
1233	5	40	10	-68	25	32	8.26	0.02	2	7.82	0.09	2	7.56	0.03	2	9163.830
1234	5	40	11	-68	47	18	10.82	0.02	2	10.12	0.06	2	9.58	0.05	2	
1235	5	40	12	-69	40	3	8.64	0.01	2	8.38	0.01	2	8.22	0.06	2	9167.459
1236	5	40	13	-68	26	26	10.11	0.01	2	9.29	0.09	2	8.94	0.07	2	
1237	5	40	15	-69	19	16	10.89	0.11	4	10.20	0.03	4	9.49	0.06	4	
1238	5	40	17	-69	27	54	9.33	0.04	6	8.67	0.03	6	8.17	0.04	6	9167.395
1239	5	40	17	-69	30	58	9.74	0.02	2	9.65	0.01	2	9.51	0.09	2	9167.441
1240	5	40	24	-69	21	19	9.29	0.05	6	8.35	0.04	6	7.88	0.02	6	
1241	5	40	25	-69	15	32	9.49	0.05	4	8.84	0.13	4	8.60	0.08	6	9163.631
1242	5	40	26	-69	51	33	7.97	0.00	2	7.52	0.01	2	7.44	0.01	4	9167.469
1243	5	40	29	-69	15	31	9.29	0.05	4	8.61	0.01	4	8.14	0.05	6	9163.671
1244	5	40	30	-68	46	16	10.57	0.04	4	9.60	0.06	4	9.05	0.09	4	
1245	5	40	32	-68	14	55	7.62	0.00	2	7.03	0.07	4	6.90	0.02	4	9163.899
1246	5	40	35	-68	7	2	9.59	0.03	2	9.05	0.05	2	8.72	0.01	2	9163.786
1247	5	40	36	-68	48	47	10.16	0.02	4	9.20	0.04	4	8.94	0.06	4	
1248	5	40	36	-70	14	41	10.90	0.03	2	10.04	0.07	2	9.26	0.07	2	
1249	5	40	37	-69	26	22	9.43	0.07	6	8.81	0.03	6	8.38	0.04	6	9167.428
1250	5	40	41	-69	35	15	11.23	0.02	2	10.27	0.06	2	9.48	0.10	2	
1251	5	40	43	-69	13	9	10.63	0.01	2	9.75	0.01	2	9.37	0.13	2	
1252	5	40	43	-71	5	22	7.60	0.05	2	6.71	0.00	2	6.87	0.01	2	9167.838
1253	5	40	43	-69	21	58	8.86	0.04	6	8.01	0.03	6	7.49	0.01	6	
1254	5	40	44	-68	56	27	7.41	0.02	2	6.72	0.02	2	6.51	0.08	2	9163.708
1255	5	40	45	-68	49	18	9.61	0.00	2	9.44	0.05	2	9.23	0.11	2	9163.812
1256	5	40	46	-68	41	12	11.16	0.01	2	10.12	0.08	2	9.38	0.12	2	
1257	5	40	48	-69	22	22	10.17	0.03	6	9.29	0.04	6	8.74	0.06	6	
1258	5	40	48	-69	33	34	9.26	0.01	2	8.41	0.00	2	7.84	0.05	2	9167.525
1259	5	40	48	-69	29	16	8.97	0.09	4	8.39	0.05	4	8.29	0.17	4	9167.503
1260	5	40	50	-69	22	46	9.39	0.04	6	8.65	0.02	6	8.03	0.06	6	9167.613

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
1261	5	40	52	-69	45	24	10.31	0.00	2	9.44	0.02	2	8.78	0.10	2	
1262	5	40	54	-69	26	12	10.50	0.01	2	9.76	0.02	2	9.45	0.04	2	9167.564
1263	5	40	55	-69	10	32	9.28	0.10	4	8.93	0.02	4	9.09	0.08	4	9163.588
1264	5	40	55	-69	23	24	8.92	0.06	6	8.15	0.03	6	7.67	0.05	6	9167.405
1265	5	40	56	-69	21	36	10.29	0.04	4	9.42	0.05	4	8.95	0.14	4	
1266	5	40	59	-69	26	11	9.41	0.05	4	8.80	0.04	4	8.33	0.08	4	9167.881
1267	5	40	59	-69	18	37	8.84	0.04	4	8.04	0.04	4	7.53	0.05	6	
1268	5	41	2	-70	43	11	10.25	0.03	2	9.13	0.01	2	8.61	0.01	2	
1269	5	41	5	-69	4	44	9.16	0.01	2	8.48	0.07	2	7.98	0.04	4	9163.576
1270	5	41	7	-69	17	16	8.80	0.06	4	8.12	0.00	4	7.68	0.03	6	9163.773
1271	5	41	8	-69	55	50	10.28	0.00	1	9.43	0.01	2	9.29	0.06	4	9167.787
1272	5	41	10	-69	38	3	8.77	0.03	2	7.91	0.01	2	7.14	0.01	2	9167.817
1273	5	41	11	-70	21	20	9.08	0.03	2	8.81	0.01	2	8.46	0.07	2	9167.674
1274	5	41	13	-70	1	8	9.64	0.05	4	8.85	0.02	4	9.03	0.06	4	9167.649
1275	5	41	13	-69	34	1	10.39	0.01	2	9.54	0.01	2	9.13	0.05	2	
1276	5	41	15	-68	46	12	6.23	0.13	3	4.77	0.12	2	4.01	0.03	4	9163.867
1277	5	41	15	-71	0	46	11.02	0.03	2	10.03	0.03	2	9.59	0.12	2	
1278	5	41	20	-69	13	33	9.67	0.05	6	9.30	0.37	9	8.25	0.03	10	9163.502
1279	5	41	20	-69	34	6	9.81	0.01	2	9.50	0.01	2	9.04	0.09	2	9167.721
1280	5	41	21	-69	31	47	9.11	0.05	4	8.35	0.05	4	8.09	0.07	4	
1281	5	41	24	-69	18	12	10.21	0.08	4	9.50	0.01	4	8.70	0.07	4	
1282	5	41	25	-68	24	39	9.86	0.08	4	9.36	0.05	4	9.21	0.08	4	9163.885
1283	5	41	29	-69	27	15	9.52	0.03	2	8.62	0.06	2	8.63	0.05	2	9167.739
1284	5	41	29	-69	24	55	9.30	0.10	4	8.69	0.01	4	8.31	0.05	4	9167.445
1285	5	41	31	-68	52	45	6.62	0.01	2	5.47	0.02	2	5.00	0.02	2	9163.913
1286	5	41	36	-69	20	34	10.21	0.07	4	9.56	0.06	4	9.19	0.09	4	
1287	5	41	37	-68	55	0	9.75	0.01	2	9.20	0.02	2	9.05	0.08	2	9163.857
1288	5	41	38	-70	8	51	10.24	0.03	4	9.44	0.01	4	9.01	0.08	4	
1289	5	41	39	-69	14	9	10.55	0.01	2	9.62	0.02	2	9.20	0.04	2	
1290	5	41	40	-68	2	35	15.06	0.12	2	13.04	0.00	2	9.04	0.31	2	
1291	5	41	44	-69	12	2	9.71	0.09	8	8.92	0.09	8	8.57	0.08	8	9163.490
1292	5	41	42	-68	30	59	11.33	0.29	2	11.04	0.00	1	7.97	0.37	2	
1293	5	41	42	-67	24	9	7.44	0.00	2	0.00	0.00	0	7.46	0.02	2	8891.3507
1294	5	41	43	-69	28	15	9.47	0.04	4	8.69	0.02	4	8.59	0.14	4	9167.512
1295	5	41	44	-69	11	16	9.90	0.08	5	9.21	0.05	6	8.73	0.08	6	
1296	5	41	45	-69	2	17	10.78	0.08	2	10.24	0.02	2	9.59	0.15	2	9163.818

Table 1—Continued

ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
1297	5	41	48	-69	12	4	9.42	0.05	6	8.82	0.06	6	8.28	0.04	6	
1298	5	41	49	-70	3	24	11.65	0.05	2	10.44	0.04	2	9.44	0.01	2	
1299	5	41	50	-69	21	15	9.75	0.04	4	8.93	0.04	4	8.49	0.03	4	9163.932
1300	5	41	53	-69	12	28	10.56	0.00	2	9.50	0.00	2	9.00	0.04	2	
1301	5	41	54	-68	54	8	10.66	0.01	2	9.79	0.04	2	9.58	0.07	2	
1302	5	41	56	-70	37	56	10.54	0.03	2	9.54	0.01	2	9.37	0.01	2	
1303	5	41	57	-69	12	18	9.82	0.05	6	9.17	0.05	6	8.84	0.03	6	9163.705
1304	5	42	0	-69	26	6	10.17	0.01	2	9.46	0.01	2	9.17	0.00	2	9167.482
1305	5	42	0	-69	11	35	9.87	0.03	8	9.21	0.05	8	8.73	0.06	8	
1306	5	42	2	-68	42	42	6.94	0.04	4	6.31	0.02	4	6.19	0.06	4	9163.420
1307	5	42	2	-68	34	44	9.95	0.17	4	9.34	0.07	4	8.95	0.07	4	
1308	5	42	4	-69	13	6	9.77	0.04	6	9.13	0.02	6	8.78	0.09	6	9163.761
1309	5	42	5	-69	10	59	10.37	0.07	4	9.71	0.01	4	9.02	0.12	4	
1310	5	42	5	-67	37	49	10.13	0.01	2	9.91	0.06	2	9.36	0.01	2	9163.807
1311	5	42	5	-69	19	2	11.34	0.01	2	10.35	0.09	2	9.51	0.03	2	
1312	5	42	7	-69	12	31	9.26	0.05	4	8.61	0.04	4	8.28	0.01	4	9163.832
1313	5	42	7	-69	12	50	9.21	0.03	4	8.70	0.05	4	8.25	0.08	4	
1314	5	42	8	-69	46	34	10.56	0.08	2	10.62	0.83	3	9.14	0.06	4	
1315	5	42	7	-69	2	52	10.64	0.04	2	9.93	0.01	2	9.33	0.05	2	
1316	5	42	10	-69	13	30	9.74	0.04	6	9.06	0.05	6	8.53	0.08	6	
1317	5	42	10	-69	13	12	9.66	0.06	4	8.84	0.03	4	8.35	0.03	4	9163.762
1318	5	42	10	-68	42	15	10.32	0.01	2	9.92	0.03	2	9.13	0.10	2	9163.767
1319	5	42	11	-69	12	48	9.38	0.02	6	8.67	0.06	6	8.10	0.06	6	9163.578
1320	5	42	12	-67	27	59	9.43	0.00	2	8.67	0.06	2	8.49	0.04	2	8891.3464
1321	5	42	12	-69	12	12	10.10	0.02	2	9.54	0.04	2	9.14	0.02	2	
1322	5	42	13	-68	41	36	8.69	0.02	4	8.04	0.04	4	7.88	0.06	4	9163.567
1323	5	42	16	-68	27	28	9.86	0.04	4	9.15	0.04	4	8.77	0.08	4	9163.755
1324	5	42	19	-68	58	6	10.21	0.01	2	9.25	0.08	2	8.95	0.02	2	9163.876
1325	5	42	20	-69	16	20	10.11	0.09	4	9.33	0.02	4	8.85	0.10	4	
1326	5	42	28	-70	13	39	9.59	0.00	2	9.10	0.01	2	8.82	0.10	2	9167.311
1327	5	42	28	-68	9	41	10.65	0.03	2	9.83	0.08	2	9.17	0.14	2	
1328	5	42	29	-68	16	29	9.92	0.05	6	9.12	0.05	6	8.78	0.05	6	9163.585
1329	5	42	30	-69	48	58	10.70	0.03	2	9.88	0.03	2	9.10	0.07	2	
1330	5	42	31	-69	24	22	10.44	0.02	2	9.73	0.08	2	9.49	0.21	2	9167.602
1331	5	42	32	-70	24	33	9.12	0.02	2	8.57	0.02	2	8.44	0.06	2	9167.761
1332	5	42	32	-70	22	54	7.36	0.02	2	6.79	0.01	2	6.82	0.04	2	9167.303

Table 1—Continued

ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
1333	5	42	32	-68	3	41	7.32	0.05	2	6.66	0.02	2	6.34	0.02	2	9163.715
1334	5	42	35	-69	8	47	8.71	0.06	4	8.22	0.03	4	7.81	0.07	6	9163.534
1335	5	42	38	-69	9	51	9.84	0.01	4	9.28	0.05	4	8.86	0.09	4	9163.1000
1336	5	42	39	-70	4	27	10.18	0.03	2	9.41	0.01	2	9.24	0.14	2	9167.747
1337	5	42	42	-68	24	55	7.68	0.09	4	7.19	0.06	4	7.03	0.14	4	9163.481
1338	5	42	43	-67	52	3	10.56	0.05	2	9.71	0.09	2	9.04	0.02	2	
1339	5	42	44	-69	11	7	10.70	0.02	2	10.06	0.01	2	9.10	0.13	2	
1340	5	42	51	-70	0	13	8.35	0.09	4	7.82	0.04	4	7.67	0.04	4	9167.697
1341	5	42	52	-69	24	5	9.58	0.01	2	9.28	0.03	2	9.04	0.02	2	9167.791
1342	5	42	52	-68	23	39	8.61	0.09	4	7.89	0.06	4	7.80	0.06	4	9163.448
1343	5	42	58	-68	5	33	8.28	0.08	3	7.62	0.05	4	7.33	0.15	4	9163.467
1344	5	43	0	-67	47	30	8.86	0.03	2	8.20	0.01	2	7.98	0.00	2	9163.624
1345	5	43	2	-69	5	51	9.73	0.04	4	8.90	0.12	4	8.55	0.02	6	9163.972
1346	5	43	2	-71	9	37	8.54	0.00	2	7.78	0.07	2	8.01	0.02	2	9167.847
1347	5	43	9	-69	3	20	8.13	0.03	4	7.62	0.06	4	7.30	0.06	4	9163.532
1348	5	43	10	-69	44	54	9.52	0.08	4	9.06	0.12	5	8.38	0.04	6	9167.312
1349	5	43	12	-68	35	36	8.18	0.01	2	7.73	0.05	2	7.61	0.02	2	9163.706
1350	5	43	16	-68	42	59	10.35	0.00	2	9.87	0.15	2	9.29	0.05	2	9163.613
1351	5	43	18	-70	27	24	6.90	0.07	2	5.88	0.01	2	5.38	0.06	2	9167.513
1352	5	43	25	-69	14	54	8.58	0.12	6	8.45	0.03	6	8.30	0.05	6	9163.1015
1353	5	43	27	-67	48	38	9.54	0.03	2	8.92	0.03	2	3.43	0.04	2	9163.473
1354	5	43	31	-69	40	21	10.05	0.02	2	9.30	0.04	2	9.34	0.05	2	
1355	5	43	31	-69	40	3	10.05	0.02	2	9.30	0.04	2	9.17	0.07	2	
1356	5	43	32	-70	23	57	8.43	0.03	2	7.56	0.01	2	7.29	0.03	2	
1357	5	43	33	-67	43	3	9.87	0.07	2	7.87	0.03	2	7.98	0.01	2	
1358	5	43	34	-67	41	19	9.81	0.00	2	7.36	0.14	2	8.47	0.00	2	
1359	5	43	34	-68	49	13	0.00	0.00	0	11.43	1.59	2	9.37	0.09	2	
1360	5	43	36	-70	4	15	9.13	0.04	2	8.90	0.03	2	9.15	0.19	2	9167.443
1361	5	43	37	-68	4	52	6.85	0.35	5	5.50	0.04	4	5.50	0.10	6	9163.546
1362	5	43	39	-70	16	52	11.22	0.02	2	10.26	0.01	2	9.36	0.07	2	
1363	5	43	49	-68	14	39	8.67	0.08	4	7.88	0.04	4	7.50	0.02	4	9163.886
1364	5	43	50	-69	58	12	7.85	0.17	4	7.25	0.01	4	7.32	0.14	4	9167.609
1365	5	43	50	-70	51	21	9.36	0.00	2	8.66	0.01	2	8.49	0.01	2	9167.603
1366	5	43	51	-71	3	38	7.43	0.00	2	6.78	0.02	2	6.76	0.03	2	9167.820
1367	5	44	1	-70	23	25	10.46	0.08	2	9.49	0.02	2	9.44	0.03	2	
1368	5	44	3	-69	29	8	9.11	0.01	2	8.65	0.01	2	8.63	0.03	2	9167.362

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
1369	5	44	4	-69	55	27	10.70	0.04	2	10.06	0.06	2	9.60	0.09	2	
1370	5	44	6	-68	37	52	10.49	0.00	2	9.50	0.05	2	8.92	0.11	2	
1371	5	44	9	-70	25	19	8.67	0.18	4	8.34	0.05	4	8.21	0.10	4	9167.661
1372	5	44	8	-68	11	11	9.83	0.09	2	9.79	0.01	2	9.46	0.20	2	9163.526
1373	5	44	9	-67	30	9	10.24	0.06	2	9.60	0.03	2	9.15	0.03	2	9163.416
1374	5	44	15	-68	8	3	9.48	0.14	6	8.54	0.13	5	8.53	0.10	6	9163.912
1375	5	44	23	-69	59	27	11.38	0.03	2	10.36	0.02	2	9.33	0.13	2	
1376	5	44	29	-70	29	48	10.66	0.06	4	9.67	0.05	4	9.31	0.09	4	
1377	5	44	29	-71	3	47	9.21	0.00	2	8.43	0.05	2	8.54	0.11	2	9167.802
1378	5	44	32	-70	36	23	9.19	0.07	6	8.31	0.04	6	8.02	0.11	6	9167.771
1379	5	44	32	-70	8	44	6.99	0.04	2	6.13	0.01	2	6.27	0.06	2	9167.892
1380	5	45	3	-69	6	37	10.38	0.01	2	9.54	0.05	2	9.01	0.02	2	
1381	5	45	6	-70	38	2	11.54	0.01	2	10.23	0.00	2	9.26	0.12	2	
1382	5	45	11	-69	6	56	7.78	0.01	2	7.01	0.01	2	6.89	0.06	2	9163.697
1383	5	45	16	-68	59	52	9.73	0.01	2	9.52	0.02	2	9.19	0.02	2	9163.919
1384	5	45	27	-68	1	18	9.57	0.02	2	9.44	0.01	2	9.16	0.05	2	9163.627
1385	5	45	33	-68	51	6	9.11	0.08	4	8.75	0.08	4	8.52	0.04	4	9163.842
1386	5	45	43	-67	51	50	7.40	0.04	2	6.81	0.05	2	6.53	0.01	2	9163.658
1387	5	45	46	-70	11	17	11.83	0.04	2	10.79	0.02	2	9.61	0.09	2	
1388	5	45	53	-69	31	24	10.67	0.07	4	9.79	0.15	4	8.94	0.13	4	
1389	5	45	54	-69	15	34	9.93	0.00	2	9.64	0.04	2	9.28	0.13	2	9163.551
1390	5	45	54	-67	58	20	10.72	0.03	2	9.96	0.06	2	9.45	0.19	2	
1391	5	45	57	-70	24	0	10.61	0.24	4	9.67	0.05	4	9.37	0.06	4	9167.713
1392	5	45	56	-69	12	23	10.61	0.00	2	10.00	0.04	2	9.36	0.01	2	
1393	5	46	4	-70	45	3	11.28	0.01	2	10.11	0.02	2	9.54	0.12	2	
1394	5	46	5	-67	42	36	7.68	0.03	4	7.46	0.04	3	7.56	0.05	4	9163.838
1395	5	46	7	-69	42	4	10.80	0.07	2	10.20	0.03	2	8.86	0.08	2	
1396	5	46	9	-67	46	35	8.86	0.06	4	8.28	0.07	4	8.09	0.11	4	9163.418
1397	5	46	12	-68	37	56	9.80	0.02	6	9.23	0.11	6	9.08	0.10	6	9163.568
1398	5	46	14	-69	20	13	9.67	0.98	6	8.00	0.10	5	7.61	0.03	6	9163.482
1399	5	46	21	-67	42	2	9.15	0.02	4	8.86	0.04	4	8.83	0.06	4	9163.774
1400	5	46	20	-68	57	33	10.20	0.03	2	10.00	0.01	2	9.39	0.16	2	9163.792
1401	5	46	23	-70	17	4	10.13	0.07	2	9.41	0.03	2	9.29	0.02	2	9167.597
1402	5	46	39	-69	25	31	10.64	0.07	4	10.13	0.17	4	9.35	0.05	4	
1403	5	46	42	-70	16	57	11.22	0.02	2	10.21	0.05	2	9.32	0.15	2	
1404	5	46	48	-70	11	5	9.27	0.05	4	8.59	0.14	4	8.42	0.09	4	9167.819

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
1405	5	46	59	-70	6	13	9.62	0.09	4	9.17	0.04	4	8.96	0.09	4	9167.543
1406	5	47	0	-70	5	27	10.56	0.01	2	9.73	0.03	2	9.54	0.06	2	9167.357
1407	5	47	0	-68	2	55	9.28	0.07	2	8.80	0.05	2	8.47	0.06	2	9163.517
1408	5	47	1	-68	39	2	9.98	0.01	2	11.24	0.60	2	9.60	0.09	2	9163.858
1409	5	47	2	-71	0	27	8.89	0.02	4	8.45	0.10	4	8.54	0.13	4	9167.774
1410	5	47	26	-67	53	31	9.65	0.02	2	8.84	0.02	2	8.32	0.08	2	9163.438
1411	5	47	33	-70	59	14	8.07	0.06	4	7.63	0.11	4	7.83	0.08	4	9167.788
1412	5	47	37	-70	31	4	8.66	0.06	4	7.92	0.03	4	7.95	0.03	4	9167.639
1413	5	47	36	-69	21	58	9.80	0.01	4	9.56	0.14	4	9.32	0.05	4	9163.594
1414	5	47	42	-68	37	38	9.95	0.01	2	9.29	0.03	2	9.02	0.04	2	9163.788
1415	5	47	52	-69	23	49	9.09	0.16	4	8.86	0.10	4	8.50	0.09	4	9167.294
1416	5	47	54	-69	49	37	10.44	0.11	3	9.79	0.06	4	9.02	0.03	4	
1417	5	47	59	-69	44	58	0.00	0.00	0	0.00	0.00	0	4.28	0.01	2	9167.474
1418	5	47	59	-67	29	22	9.29	0.00	2	8.50	0.01	2	8.52	0.06	2	8904.1417
1419	5	48	7	-70	57	42	8.62	0.04	4	8.31	0.06	4	8.30	0.06	4	9167.786
1420	5	48	7	-70	23	21	10.54	0.03	2	9.53	0.00	2	8.90	0.11	2	
1421	5	48	19	-70	20	43	7.42	0.01	2	7.27	0.01	2	7.21	0.04	2	9167.557
1422	5	48	22	-70	24	45	10.78	0.01	2	9.69	0.05	2	8.93	0.03	2	
1423	5	48	28	-69	50	29	10.89	0.00	2	9.89	0.02	2	9.35	0.06	2	
1424	5	48	30	-70	32	40	10.55	0.01	2	9.84	0.02	2	9.32	0.01	2	9167.544
1425	5	48	31	-70	0	19	9.61	0.05	6	9.11	0.07	6	9.05	0.08	6	9167.633
1426	5	48	34	-69	9	43	9.65	0.01	4	9.00	0.07	4	8.78	0.02	4	9163.425
1427	5	48	35	-69	28	31	9.79	0.02	2	9.66	0.03	2	9.02	0.05	2	9167.650
1428	5	48	40	-70	3	18	7.92	0.05	6	7.21	0.05	6	6.82	0.03	6	
1429	5	48	41	-69	13	22	9.82	0.03	2	9.48	0.01	2	9.24	0.08	2	9163.712
1430	5	48	43	-70	12	52	8.39	0.01	2	7.97	0.01	2	7.45	0.10	2	9167.622
1431	5	48	45	-68	23	39	9.63	0.02	2	9.29	0.00	2	9.14	0.05	2	9163.511
1432	5	48	48	-70	33	42	9.52	0.02	4	8.79	0.03	4	8.78	0.03	4	9167.478
1433	5	48	50	-68	10	6	10.30	0.01	2	9.72	0.01	2	9.29	0.09	2	9163.561
1434	5	48	51	-68	52	27	9.88	0.02	2	9.23	0.06	3	9.11	0.02	4	9163.863
1435	5	48	54	-69	18	53	9.78	0.03	4	9.51	0.06	4	9.14	0.12	4	9163.501
1436	5	48	59	-69	51	48	8.58	0.04	6	8.18	0.05	6	7.83	0.03	6	9167.386
1437	5	48	59	-68	31	47	9.46	0.02	2	9.22	0.09	2	9.38	0.04	2	9163.520
1438	5	49	1	-70	21	2	12.17	0.04	2	10.91	0.03	2	9.31	0.07	2	
1439	5	49	1	-70	35	15	10.57	0.02	2	9.59	0.02	2	9.22	0.09	2	9167.616
1440	5	49	4	-69	42	39	9.63	0.05	2	9.34	0.01	2	8.75	0.07	2	9167.492

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
1441	5	49	13	-70	42	45	10.83	0.04	4	10.06	0.10	4	9.35	0.03	4	
1442	5	49	24	-69	18	39	8.56	0.05	2	8.26	0.02	2	7.93	0.04	2	9163.641
1443	5	49	29	-69	47	13	8.29	0.09	5	8.24	0.03	6	7.99	0.05	6	9167.419
1444	5	49	30	-70	7	34	9.70	0.00	2	8.85	0.01	2	8.42	0.03	2	
1445	5	49	38	-70	40	13	9.83	0.05	4	9.15	0.03	4	9.02	0.11	4	9167.620
1446	5	49	46	-70	1	23	8.37	0.10	4	8.10	0.02	4	7.86	0.05	4	9167.418
1447	5	49	49	-68	44	1	9.91	0.05	3	9.26	0.06	4	9.04	0.10	4	9163.734
1448	5	49	51	-70	42	8	9.16	0.05	4	8.46	0.06	4	8.35	0.04	4	9167.347
1449	5	49	56	-70	11	6	9.58	0.01	2	9.32	0.04	2	8.97	0.11	2	9167.424
1450	5	49	57	-68	16	46	10.30	0.02	2	9.45	0.01	2	8.92	0.01	2	
1451	5	49	59	-69	41	5	6.57	0.02	3	5.91	0.04	4	5.50	0.02	4	9167.490
1452	5	49	59	-69	53	45	9.99	0.05	6	9.45	0.05	6	9.04	0.04	6	9167.462
1453	5	50	0	-69	32	2	10.14	0.07	2	10.08	0.00	2	9.39	0.03	2	
1454	5	50	2	-68	16	10	10.32	0.03	2	9.54	0.07	2	8.86	0.02	2	
1455	5	50	6	-68	17	55	10.12	0.02	2	9.26	0.01	2	8.92	0.05	2	
1456	5	50	11	-69	34	29	8.67	0.09	4	8.18	0.04	4	7.86	0.02	4	9167.444
1457	5	50	14	-70	18	13	8.11	0.00	2	7.25	0.01	2	6.90	0.07	2	9167.475
1458	5	50	14	-70	44	59	11.91	0.07	2	11.10	0.04	2	9.23	0.05	2	
1459	5	50	30	-70	35	47	9.20	0.08	6	8.87	0.02	6	8.84	0.07	6	9167.399
1460	5	50	33	-67	38	35	10.04	0.01	2	9.08	0.04	2	8.83	0.00	2	9163.515
1461	5	50	40	-68	25	53	6.78	0.00	1	5.99	0.08	2	5.71	0.01	2	9163.574
1462	5	50	41	-69	27	25	9.59	0.13	6	9.13	0.08	6	8.92	0.05	6	9167.665
1463	5	50	42	-68	17	30	10.36	0.02	2	9.56	0.02	2	9.28	0.11	2	
1464	5	50	44	-69	40	0	10.64	0.03	2	10.34	0.11	2	9.45	0.00	2	9167.686
1465	5	50	56	-69	11	9	9.98	0.01	2	9.62	0.05	2	9.52	0.13	2	9163.480
1466	5	50	57	-68	23	22	10.04	0.02	2	9.22	0.04	2	8.98	0.01	2	9163.508
1467	5	51	1	-69	54	9	6.92	0.05	4	6.67	0.07	4	6.55	0.05	4	9167.627
1468	5	51	2	-70	1	23	7.23	0.01	2	6.44	0.01	2	5.99	0.08	2	9167.456
1469	5	51	4	-68	6	42	9.25	0.01	4	8.58	0.02	4	8.67	0.01	4	9163.873
1470	5	51	6	-69	54	6	9.45	0.02	4	9.20	0.06	4	8.91	0.04	4	9167.558
1471	5	51	14	-67	47	32	9.86	0.00	2	9.10	0.02	2	9.13	0.09	2	9163.617
1472	5	51	20	-67	40	56	9.40	0.06	4	8.86	0.02	2	8.88	0.15	4	9163.700
1473	5	51	21	-70	40	6	9.43	0.02	2	8.79	0.02	2	8.56	0.02	2	9167.501
1474	5	51	25	-70	53	1	9.33	0.01	2	8.76	0.00	2	9.04	0.04	2	9167.484
1475	5	51	27	-70	28	43	8.22	0.20	4	8.11	0.10	4	8.22	0.05	4	9167.608
1476	5	51	29	-70	59	30	9.95	0.01	2	9.33	0.04	2	9.34	0.00	2	

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
1477	5	51	47	-68	5	50	10.40	0.01	2	9.87	0.02	2	9.32	0.10	2	9163.461
1478	5	51	48	-69	48	4	8.21	0.02	2	8.01	0.04	2	7.79	0.04	4	9167.642
1479	5	51	52	-68	3	8	7.85	0.04	2	7.50	0.01	2	7.33	0.03	2	9163.579
1480	5	51	54	-71	4	43	9.86	0.02	2	8.83	0.01	2	8.59	0.01	2	
1481	5	51	59	-69	52	19	9.99	0.01	2	9.87	0.05	2	9.07	0.08	2	9167.658
1482	5	52	8	-68	17	37	9.79	0.01	2	9.03	0.09	4	8.69	0.05	4	9163.646
1483	5	52	14	-68	12	15	9.28	0.06	4	8.49	0.02	4	7.97	0.07	4	9163.509
1484	5	52	20	-68	19	10	9.67	0.05	2	9.34	0.00	2	9.18	0.10	2	9163.859
1485	5	52	21	-68	18	43	9.27	0.04	2	8.76	0.00	2	8.70	0.01	2	9163.644
1486	5	52	23	-70	35	33	9.93	0.00	2	9.22	0.03	2	8.89	0.02	2	9167.549
1487	5	52	25	-69	42	31	8.77	0.01	2	8.52	0.03	2	7.94	0.02	2	9167.426
1488	5	52	27	-68	19	22	9.50	0.03	2	8.75	0.08	2	8.66	0.09	2	
1489	5	52	27	-69	14	8	10.04	0.05	4	9.37	0.08	5	8.75	0.10	6	
1490	5	52	28	-67	34	19	7.00	0.01	2	6.24	0.02	2	5.89	0.05	2	9163.655
1491	5	52	28	-67	55	32	8.75	0.03	2	8.19	0.04	2	7.98	0.04	2	9163.815
1492	5	52	28	-67	52	58	9.52	0.02	2	8.77	0.01	2	8.36	0.03	2	9163.444
1493	5	52	29	-68	58	15	7.13	0.01	2	6.34	0.02	2	6.07	0.02	2	9163.415
1494	5	52	29	-68	43	43	9.34	0.02	2	8.36	0.03	2	8.38	0.00	2	9163.860
1495	5	52	38	-68	54	57	8.16	0.02	2	7.59	0.02	2	7.25	0.02	2	9163.878
1496	5	52	48	-68	22	48	8.88	0.02	2	7.99	0.01	2	7.83	0.02	2	9163.797
1497	5	52	51	-69	28	11	9.76	0.04	4	9.63	0.12	4	9.26	0.06	4	9167.716
1498	5	52	56	-69	14	9	8.58	0.06	6	7.87	0.07	6	7.66	0.04	5	9163.649
1499	5	52	59	-69	8	27	9.92	0.03	2	9.33	0.02	2	9.42	0.09	2	9163.596
1500	5	53	0	-68	26	33	9.35	0.07	2	9.52	0.08	2	9.42	0.10	2	9163.657
1501	5	53	0	-70	11	5	9.13	0.05	4	8.31	0.15	4	8.02	0.03	4	9167.498
1502	5	53	2	-70	49	54	7.90	0.01	2	7.71	0.01	2	7.48	0.02	2	9167.589
1503	5	53	8	-69	5	55	8.62	0.04	2	8.09	0.01	2	8.19	0.02	4	9163.640
1504	5	53	11	-69	22	23	9.14	0.07	4	9.10	0.11	4	9.03	0.09	4	9163.892
1505	5	53	15	-67	26	7	9.09	0.01	2	8.31	0.00	2	8.28	0.03	2	8904.1410
1506	5	53	20	-70	58	14	9.09	0.03	4	8.52	0.08	4	8.38	0.03	4	
1507	5	53	37	-68	59	50	10.73	0.03	2	9.56	0.03	2	9.33	0.05	2	
1508	5	53	39	-69	1	19	7.34	0.05	2	7.09	0.01	3	6.76	0.04	4	9163.456
1509	5	53	51	-67	50	50	9.79	0.01	2	9.14	0.04	2	8.62	0.08	2	9163.799
1510	5	53	53	-69	14	24	6.69	0.02	6	5.97	0.07	6	5.77	0.04	6	9163.737
1511	5	53	53	-67	54	5	8.63	0.02	2	7.82	0.04	2	7.26	0.09	2	9163.434
1512	5	53	54	-68	7	20	9.34	0.04	2	8.85	0.02	2	8.49	0.04	2	9163.759

Table 1—Continued

ID	h	m	s	°	′	″	J	err	n	H	err	n	K	err	n	GSCID
1513	5	53	54	-68	2	53	9.20	0.01	2	8.55	0.06	2	8.57	0.01	2	9163.690
1514	5	53	56	-70	38	18	9.77	0.02	2	9.23	0.00	2	9.02	0.00	2	9167.293
1515	5	54	1	-71	0	29	10.98	0.01	2	9.60	0.02	2	9.31	0.11	2	
1516	5	54	4	-69	35	13	9.71	0.00	2	9.25	0.05	2	8.89	0.13	2	9167.710
1517	5	54	6	-69	37	23	10.64	0.01	2	9.89	0.05	2	8.95	0.08	2	
1518	5	54	15	-69	13	45	8.82	0.13	6	8.45	0.07	6	8.32	0.10	6	9163.525
1519	5	54	19	-70	54	52	9.97	0.04	4	9.47	0.01	4	9.22	0.06	4	
1520	5	54	23	-68	50	42	9.66	0.03	2	8.90	0.01	2	9.09	0.10	2	9163.479
1521	5	54	39	-70	25	48	9.54	0.01	2	8.78	0.01	2	8.48	0.01	2	9167.352
1522	5	54	40	-70	7	44	10.02	0.00	2	9.50	0.07	2	9.17	0.04	2	9167.354
1523	5	54	44	-69	47	16	9.91	0.07	6	9.32	0.02	6	8.75	0.06	6	
1524	5	54	52	-70	30	36	7.54	0.09	4	7.29	0.02	4	7.20	0.01	4	9167.611
1525	5	54	59	-70	11	23	8.60	0.02	2	7.98	0.01	2	7.86	0.01	2	9167.435
1526	5	55	2	-67	42	51	7.86	0.02	2	7.28	0.02	2	7.21	0.01	2	9163.531
1527	5	55	7	-70	56	49	7.05	0.14	4	6.34	0.13	4	6.34	0.07	4	9167.15
1528	5	55	14	-68	2	14	8.97	0.03	4	8.62	0.06	4	8.28	0.08	4	9163.823
1529	5	55	24	-69	35	13	10.63	0.01	2	9.96	0.08	2	9.22	0.10	2	
1530	5	55	24	-68	59	28	9.83	0.01	4	9.15	0.22	4	9.04	0.07	4	9163.879
1531	5	55	29	-67	33	58	6.64	0.01	2	5.56	0.06	2	5.52	0.03	2	9163.833
1532	5	55	33	-69	26	2	8.19	0.02	6	7.95	0.04	6	7.89	0.02	6	9167.464
1533	5	55	38	-68	2	49	6.26	0.05	2	5.28	0.04	4	4.96	0.05	4	9163.597
1534	5	55	42	-68	1	3	8.71	0.10	4	8.35	0.04	4	8.20	0.02	4	9163.752
1535	5	55	44	-70	29	45	10.05	0.06	4	9.34	0.07	4	9.05	0.10	4	9167.185
1536	5	55	55	-69	38	43	9.64	0.11	4	9.24	0.04	4	9.15	0.13	4	9167.229
1537	5	55	58	-70	36	33	10.50	0.02	2	9.77	0.01	2	9.64	0.16	2	9167.255
1538	5	55	58	-69	4	13	9.66	0.03	2	9.57	0.05	2	9.33	0.17	2	9163.303
1539	5	56	0	-67	41	14	9.62	0.05	2	8.91	0.05	2	8.60	0.03	2	
1540	5	56	0	-68	50	53	9.27	0.05	4	8.79	0.01	4	8.70	0.08	4	9163.398
1541	5	56	0	-68	1	9	11.85	0.15	2	10.47	0.07	2	9.31	0.07	2	
1542	5	56	3	-68	3	59	10.04	0.20	4	9.46	0.10	4	9.02	0.04	4	9163.507
1543	5	56	6	-69	44	3	9.56	0.09	2	9.48	0.05	2	9.17	0.04	2	9167.200
1544	5	56	15	-68	42	9	9.77	0.02	2	8.99	0.02	2	8.55	0.01	2	9163.150
1545	5	56	17	-69	58	22	10.02	0.03	4	9.40	0.32	4	8.96	0.10	4	9167.173
1546	5	56	18	-70	4	39	9.24	0.01	2	8.60	0.00	2	8.47	0.05	2	9167.104
1547	5	56	24	-70	48	42	9.61	0.01	2	8.57	0.06	2	8.43	0.01	2	9167.3
1548	5	56	32	-70	17	24	7.27	0.01	2	6.91	0.07	2	6.67	0.02	2	9167.239

Table 1—Continued

ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
1549	5	56	36	-70	6	40	6.98	0.03	2	5.87	0.05	2	5.51	0.06	2	9167.166
1550	5	56	40	-68	10	18	9.83	0.01	2	9.40	0.07	2	8.97	0.00	2	9163.253
1551	5	56	52	-71	4	37	9.76	0.03	2	8.93	0.06	2	9.07	0.09	2	9167.67
1552	5	57	6	-70	0	48	10.31	0.04	2	9.54	0.04	2	9.29	0.05	2	9167.126
1553	5	57	10	-67	35	20	10.30	0.01	2	0.00	0.00	0	9.28	0.02	2	9163.198
1554	5	57	14	-69	28	41	7.13	0.04	6	7.01	0.03	6	6.97	0.05	6	9167.176
1555	5	57	15	-67	29	24	9.91	0.00	2	0.00	0.00	0	9.12	0.01	2	8904.11
1556	5	57	17	-69	11	12	9.50	0.03	2	8.95	0.01	2	9.02	0.11	2	9163.387
1557	5	57	19	-69	18	31	9.79	0.06	2	9.63	0.01	2	9.31	0.11	2	9163.41
1558	5	57	23	-70	56	9	9.83	0.01	2	8.97	0.08	2	9.03	0.04	2	9167.61
1559	5	57	33	-68	13	17	10.15	0.02	2	9.49	0.03	2	9.24	0.18	2	9163.241
1560	5	57	36	-69	11	43	10.01	0.01	2	9.55	0.02	2	8.96	0.11	2	9163.373
1561	5	57	40	-69	36	28	10.18	0.01	2	10.23	0.04	2	9.42	0.13	2	9167.118
1562	5	57	46	-67	53	34	9.56	0.10	2	9.03	0.03	2	9.06	0.09	2	9163.314
1563	5	57	52	-68	51	13	9.98	0.01	2	9.74	0.01	2	9.41	0.04	2	9163.291
1564	5	57	53	-71	6	17	9.79	0.01	2	9.54	0.00	2	9.39	0.09	2	9167.81
1565	5	57	58	-70	13	4	6.88	0.00	2	5.79	0.02	2	5.78	0.08	2	9167.235
1566	5	57	59	-71	10	19	9.93	0.00	2	9.12	0.02	2	9.14	0.02	2	9167.101
1567	5	58	3	-67	40	50	9.71	0.50	4	8.52	0.01	4	8.29	0.04	4	9163.222
1568	5	58	10	-69	1	16	6.97	0.01	2	5.84	0.01	2	5.58	0.08	2	9163.200
1569	5	58	12	-69	34	22	7.28	0.04	2	6.64	0.03	2	6.02	0.01	2	9167.259
1570	5	58	20	-69	11	51	8.67	0.09	4	7.91	0.13	4	7.72	0.15	4	9163.378
1571	5	58	21	-70	32	21	10.40	0.01	2	9.63	0.03	2	9.47	0.01	2	9167.148
1572	5	58	24	-67	28	10	7.77	0.04	2	7.12	0.01	2	7.12	0.01	2	8904.34
1573	5	58	30	-69	20	41	10.02	0.02	2	9.56	0.03	2	9.43	0.02	2	9163.31
1574	5	58	32	-69	51	27	0.00	0.00	0	0.00	0.00	0	4.06	0.03	2	9167.60
1575	5	58	35	-70	59	51	9.02	0.01	2	8.47	0.08	2	8.57	0.02	2	9167.153
1576	5	58	43	-68	57	34	10.08	0.03	2	9.32	0.01	2	8.93	0.04	2	9163.236
1577	5	59	11	-68	2	14	9.45	0.08	2	8.96	0.04	2	8.87	0.01	2	9163.319
1578	5	59	16	-71	11	32	6.39	0.05	2	5.82	0.03	2	6.32	0.02	2	9167.19
1579	5	59	20	-69	10	30	9.37	0.02	2	8.78	0.01	2	8.86	0.09	2	9163.401
1580	5	59	26	-68	9	17	11.11	0.04	2	10.41	0.13	2	9.24	0.08	2	
1581	5	59	36	-68	49	36	9.69	0.00	2	9.12	0.02	2	8.92	0.05	2	9163.223
1582	5	59	37	-67	50	37	8.57	0.03	2	8.28	0.07	2	8.20	0.02	2	9163.70
1583	5	59	51	-69	51	38	7.91	0.03	2	7.57	0.03	2	7.35	0.00	2	9167.251
1584	5	59	55	-69	58	18	7.43	0.05	3	6.99	0.05	4	6.67	0.06	4	9167.266

Table 1—Continued

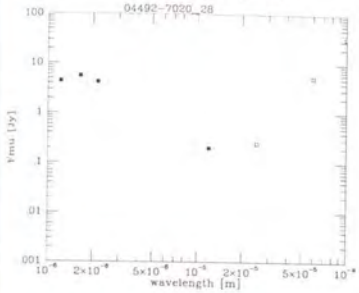
ID	h	m	s	o	′	″	J	err	n	H	err	n	K	err	n	GSCID
1585	5	59	55	-69	55	52	10.05	0.01	2	10.01	0.00	2	9.40	0.08	2	9167.272
1586	6	0	21	-69	23	30	8.90	0.01	2	8.23	0.01	2	7.87	0.00	2	9168.1203
1587	6	0	36	-67	52	39	9.25	0.08	2	8.72	0.00	2	8.90	0.03	2	9164.1383
1588	6	1	13	-67	37	53	8.96	0.06	2	8.22	0.03	2	8.22	0.04	2	
1589	6	1	19	-70	0	49	7.19	0.00	2	7.44	0.00	2	7.50	0.04	2	9168.753
1590	6	1	20	-68	51	39	9.08	0.01	2	8.77	0.01	2	8.59	0.03	2	9164.1182
1591	6	1	33	-69	45	30	8.73	0.02	2	8.30	0.02	2	7.99	0.07	2	9168.1258
1592	6	1	43	-69	31	28	7.74	0.01	2	6.91	0.04	2	6.73	0.01	2	9168.483
1593	6	1	43	-67	51	50	7.53	0.06	2	7.02	0.09	2	6.91	0.03	2	
1594	6	1	51	-70	35	41	6.28	0.00	1	5.07	0.00	2	4.80	0.01	2	9168.1142
1595	6	2	18	-67	40	59	8.61	0.04	2	7.99	0.01	2	8.15	0.02	2	
1596	6	2	25	-69	40	41	9.67	0.07	2	9.41	0.02	2	9.32	0.05	2	9168.368
1597	6	2	42	-69	40	18	9.56	0.02	2	9.53	0.01	2	9.42	0.09	2	9168.569
1598	6	2	52	-69	25	54	9.01	0.06	2	9.20	0.03	2	9.31	0.00	2	9168.1109
1599	6	2	56	-69	41	11	8.25	0.01	2	7.83	0.02	2	7.76	0.01	2	9168.476

SEDs from $1.25\mu m$ to $100\mu m$

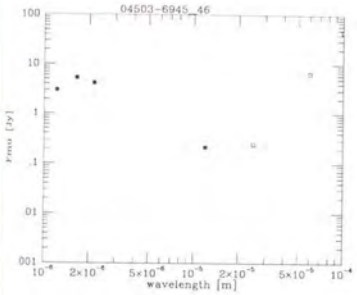
The followings are the SEDs of IRAS PSC object that are associated with the NIR sources detected in this survey. The horizontal axis represents wavelength. The vertical axis represents flux density. The flux density is plotted in a logarithmic scale. The filled squares are flux densities at the J, H, K band and $12, 25, 60, 100\mu m$ IRAS passband, respectively. The open squares are flux density upper limit. The crosses represent that there is no measurement at the wave length. The sources are classified into four classes (B, N0, N1, and N2) according to the NIR/FIR flux ratio (see text). The class N2 is classified into three subclasses (N2A, N2B and N2C) according to the NIR color. In order to identify the sources, Astrophysics Data System (ADS) Abstract Service database and SIMBAD [3] database are surveyed.

[3]The SIMBAD (Set of Identifications, Measurements and Bibliography for Astronomical Data) database is managed by the Centre de Données astronomiques de Strasbourg (CDS)

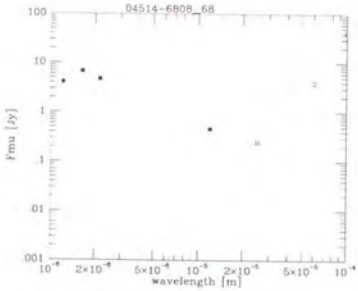
Class B objects



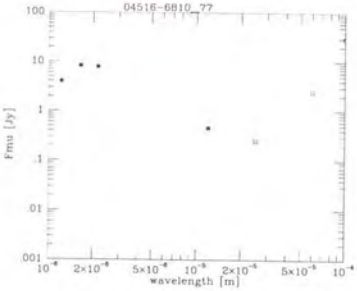
IRAS 04492-7020 is associated with ID28, and identified as HD31335. The spectral type is K0III.



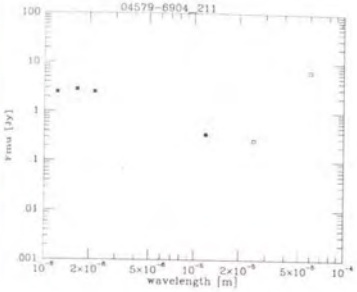
IRAS 04503-6945 is associated with ID46.



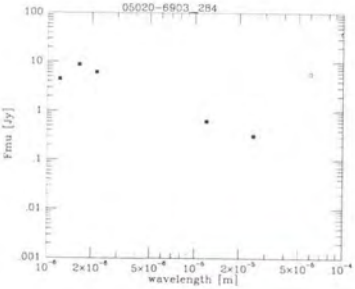
IRAS 04514-6808 is associated with ID68, and identified as HD31532. The spectral type is G0V.



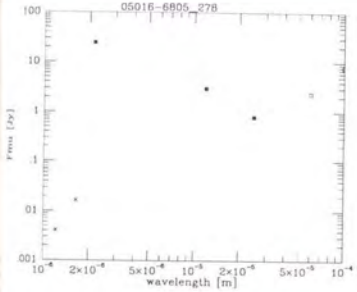
IRAS 04516-6810 is associated with ID77, and identified as HD31576. The spectral type is K4II/III.



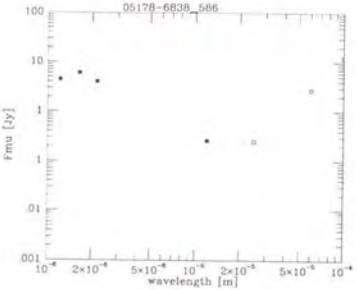
IRAS 04579-6904 is associated with ID211, and identified as HD32439. The spectral type is K3III.



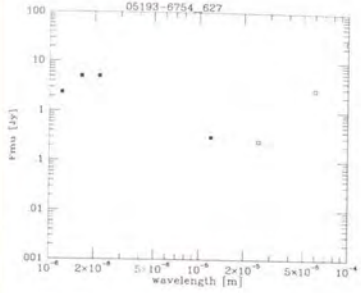
IRAS 05020-6903 is associated with ID284.



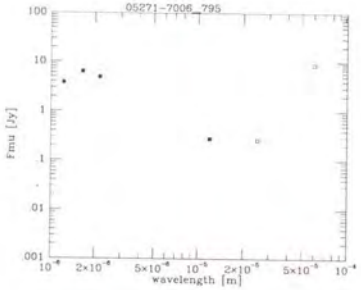
IRAS 05016-6805 is associated with ID278,and identified as HD32972. The spectral type is M3III.



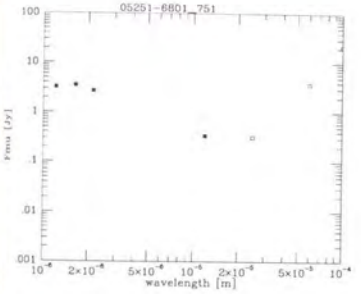
IRAS 05178-6838 is associated with ID586, and identified as HD35230. The spectral type is G8III.



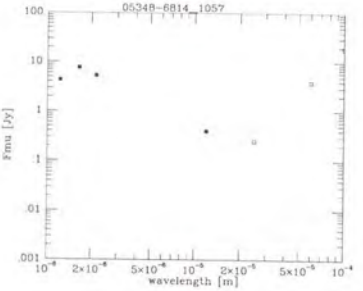
IRAS 05193-6754 is associated with ID627, and identified as HD269344. The spectral type is K5III.



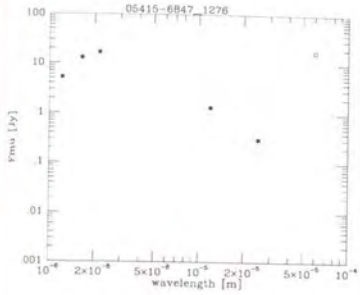
IRAS 05271-7006 is associated with ID795, and identified as Carbon-Star HD36598. The spectral type is Kp.



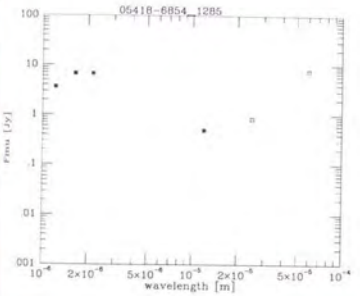
IRAS 05251-6801 is associated with ID751, and identified as HD36277. The spectral type is G8III/IV.



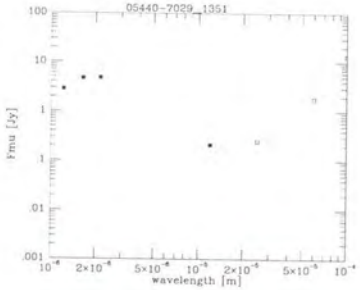
IRAS 05348-6814 is associated with ID1057, and identified as HD37668. The spectral type is K2III.



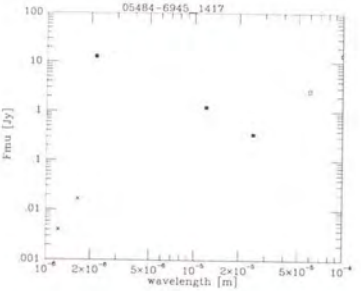
IRAS 05415-6847 is associated with ID1276, and identified as HD38617. The spectral type is K3III.



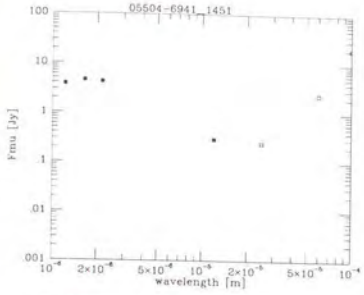
IRAS 05418-6854 is associated with ID1285.



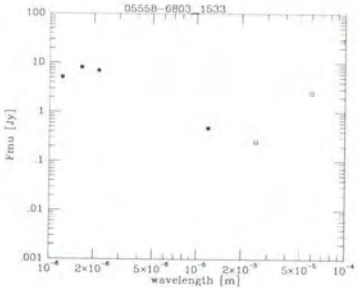
IRAS 05440-7029 is associated with ID1351.



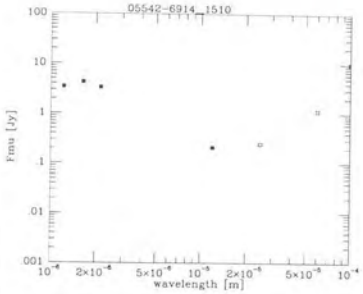
IRAS 05484-6945 is associated with ID1417, and identified as HD39674. The spectral type is M3III.



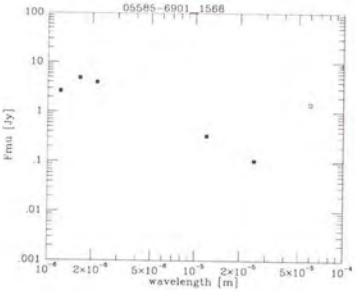
IRAS 05504-6941 is associated with ID1451, and identified as HD39980. The spectral type is K3IIICN.



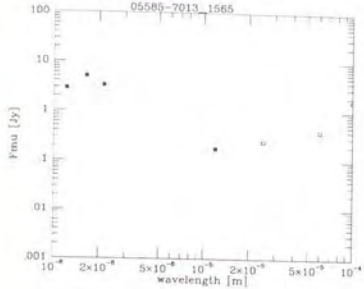
IRAS 05558-6803 is associated with ID1533, and identified as HD40810. The spectral type is K2III.



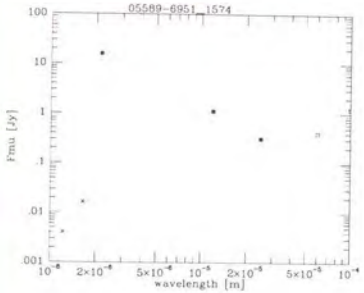
IRAS 05542-6914 is associated with ID1510, and identified as HD40597. The spectral type is K2/K3III.



IRAS 05585-6901 is associated with ID1568.



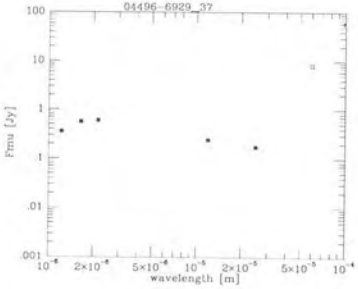
IRAS 05585-7013 is associated with ID1565, and identified as HD41279. The spectral type is K2/K3III.



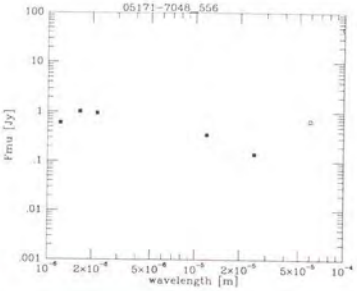
IRAS 05589-6951 is associated with ID1574, and identified as HD41356. The spectral type is K4III.

Class N objects

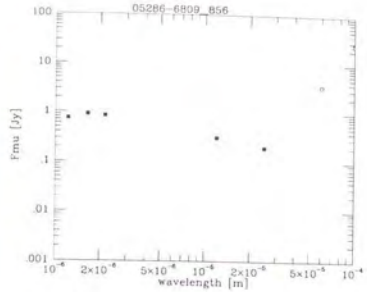
Class N0 objects



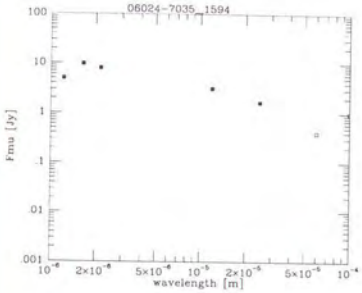
IRAS 04496-6929 is associated with ID37.



IRAS 05171-7048 is associated with ID556, and identified as a Variable-Star ZZMen (HV928).

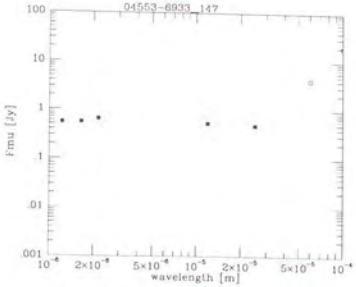


IRAS 05286-6809 is associated with ID856.

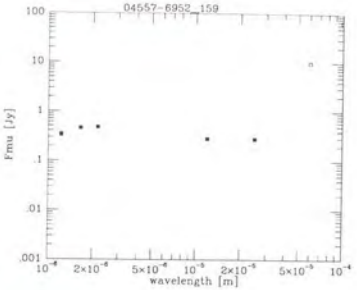


IRAS 06024-7035 is associated with ID1594.

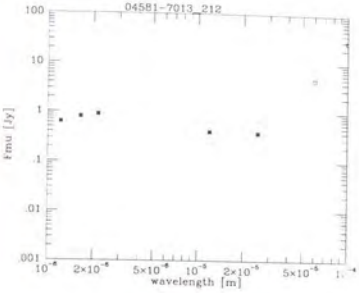
Class N1 objects



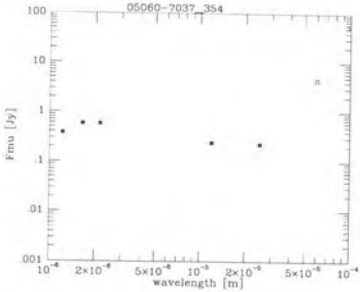
IRAS 04553-6933 is associated with ID147.



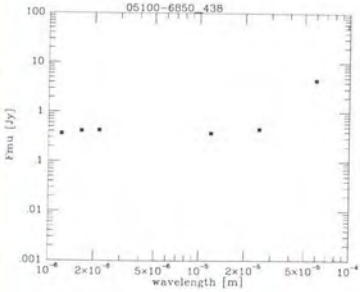
IRAS 04557-6952 is associated with ID159.



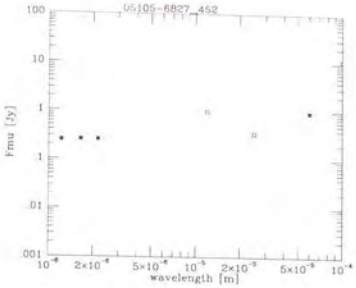
IRAS 04581-7013 is associated with ID212.



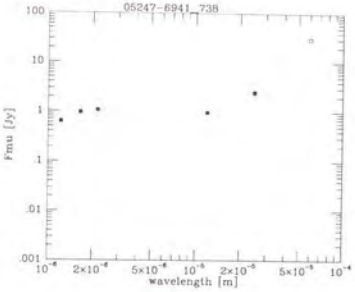
IRAS 05060-7037 is associated with ID354, and identified as Variable-Star HV894.



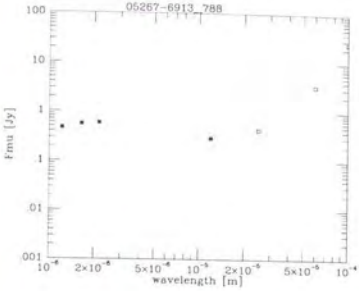
IRAS 05100-6850 is associated with ID438.



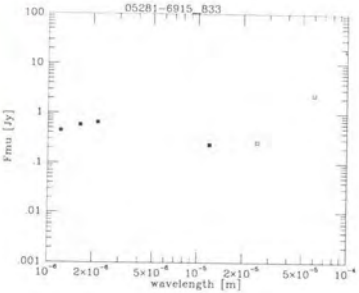
IRAS 05105-6827 is associated with ID452.



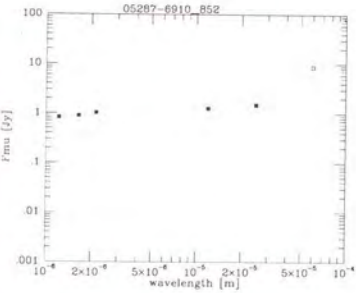
IRAS 05247-6941 is associated with ID738, and identified as WOHS264.



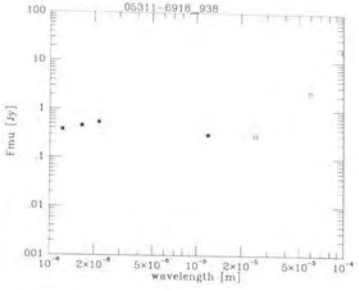
IRAS 05267-6913 is associated with ID788.



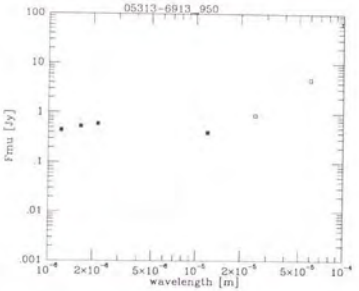
IRAS 05281-6915 is associated with ID833.



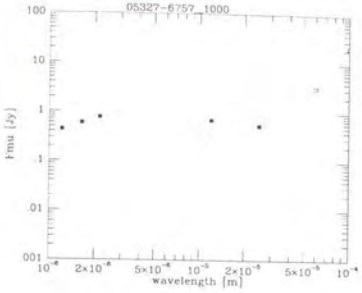
IRAS 05287-6910 is associated with ID852, and identified as an Emission-line-Star HD269599. The spectral type is B8Iab.



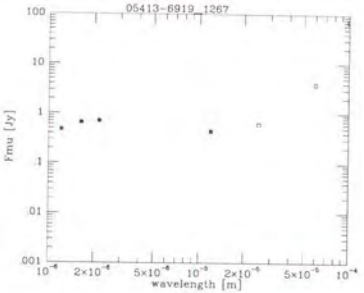
IRAS 05311-6918 is associated with ID938.



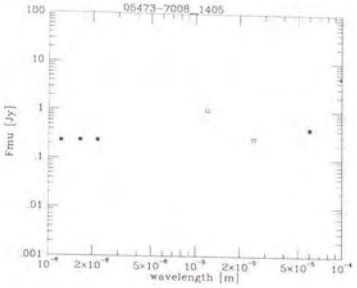
IRAS 05313-6913 is associated with ID950.



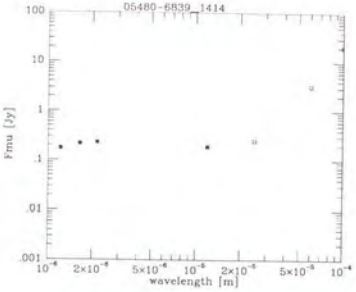
IRAS 05327-6757 is associated with ID1000, and identified as a Variable-Star HV996. The spectral type is M4Iab.



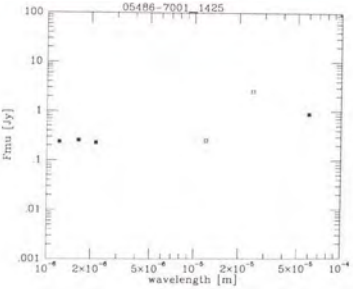
IRAS 05413-6919 is associated with ID1267.



IRAS 05473-7008 is associated with ID1405.

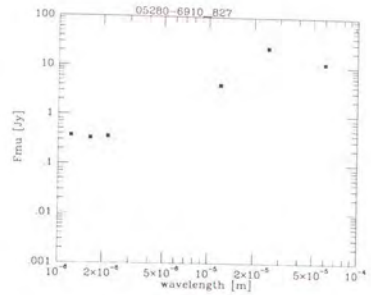


IRAS 05480-6839 is associated with ID1414.

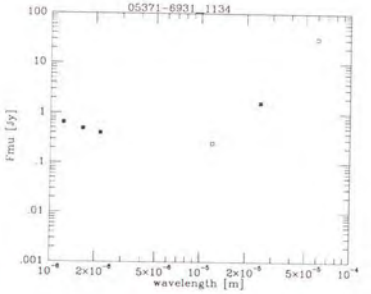


IRAS 05486-7001 is associated with ID1425.

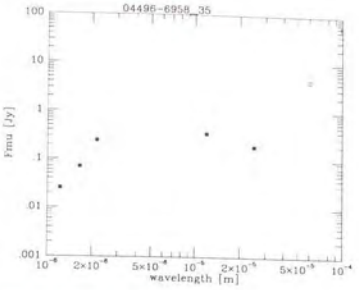
Class N2 objects



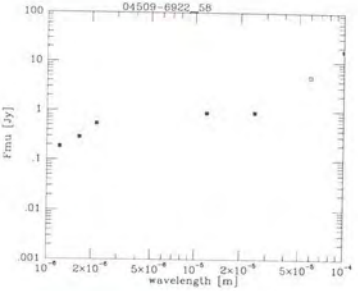
Class N2A objects IRAS 05280-6910 is associated with ID827,and identified as planetary Nebula NGC1984.



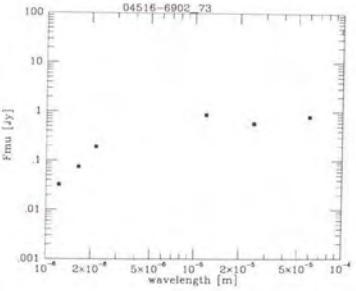
IRAS 05371-6931 is associated with ID1134, and an Emission-line-Star HD269858.



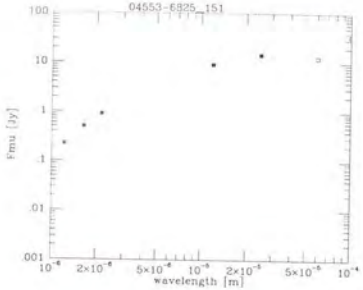
Class N2B objects IRAS 04496-6958 is associated with ID35.



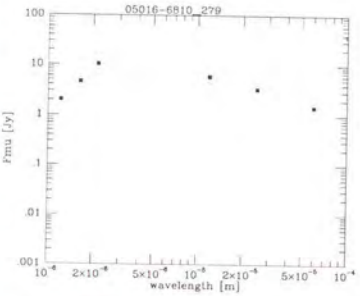
IRAS 04509-6922 is associated with ID58.



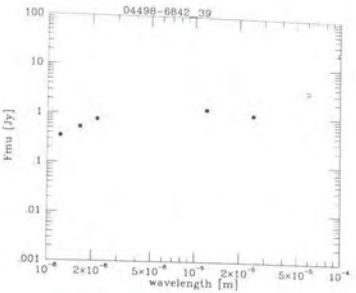
IRAS 04516-6902 is associated with ID73.



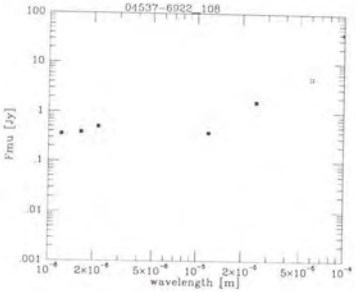
IRAS 04553-6825 is associated with ID151. This object is identified as a RSG with dust shell in the LMC (Elias et al. 1986).



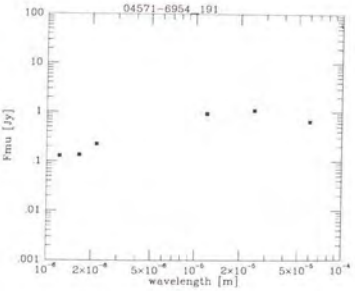
IRAS 05016-6810 is associated with ID279, and identified as Variable-Star RXDor (HV884). The spectral type is M7.



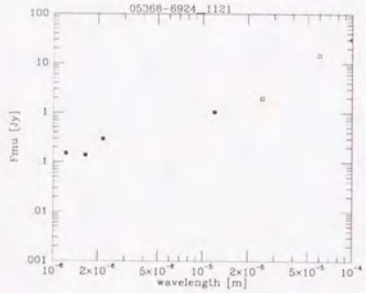
Class N2C objects IRAS 04498-6842 is associated with ID39.



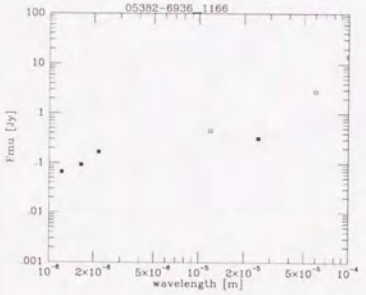
IRAS 04537-6922 is associated with ID108.



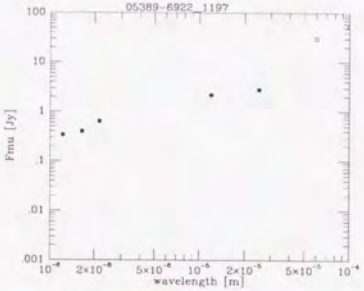
IRAS 04571-6954 is associated with ID191, and identified as Emission-line Star HD268835. The spectral type is B8Ia.



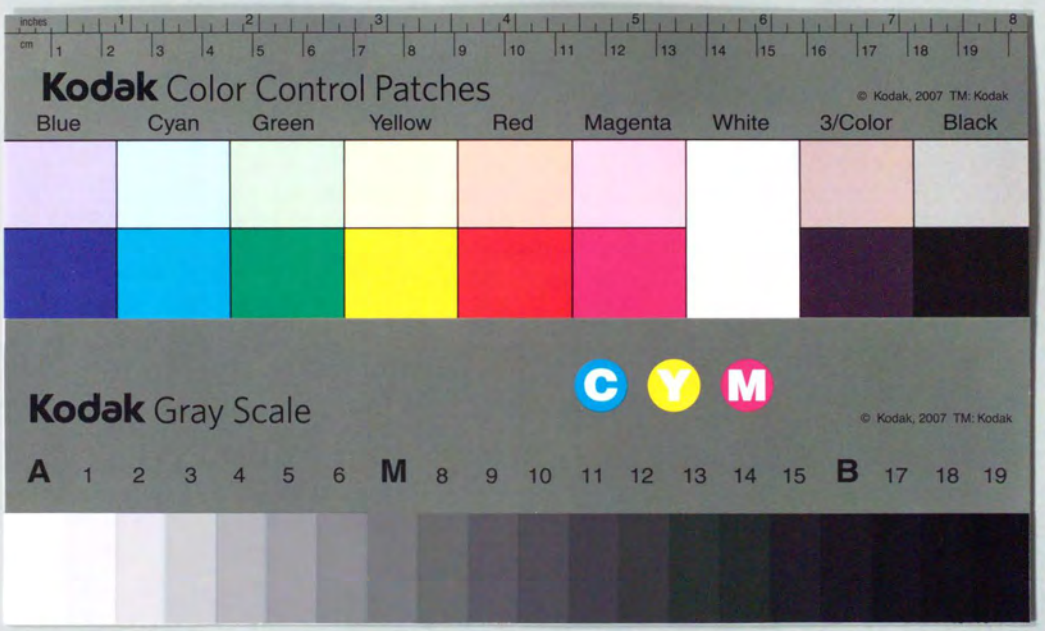
IRAS 05368-6924 is associated with ID1121, and identified as Emission-line-Star HD37974. The spectral type is Be.



IRAS 05382-6936 is associated with ID1166.



IRAS 05389-6922 is associated with ID1197.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