

図 4.33 静翼出口の流れに与えるレイノルズ数の影響 (その1)
 $Tu_{in}=0.5\%$ での全圧損失, 絶対速度, 静圧の分布

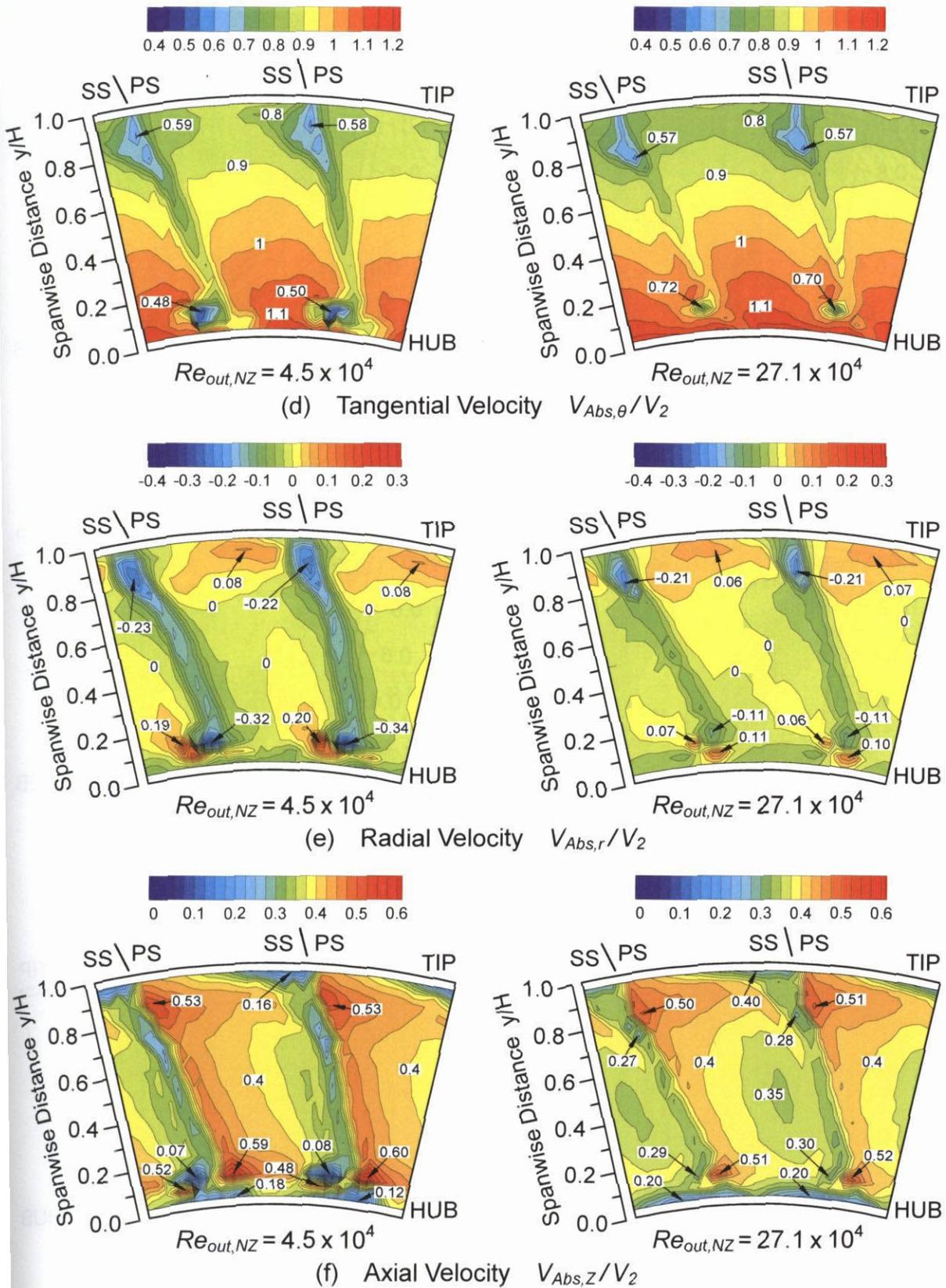


図 4.33 静翼出口の流れに与えるレイノルズ数の影響 (その2)
 $Tu_{in}=0.5\%$ での周方向速度, 半径方向速度, 軸方向速度の分布

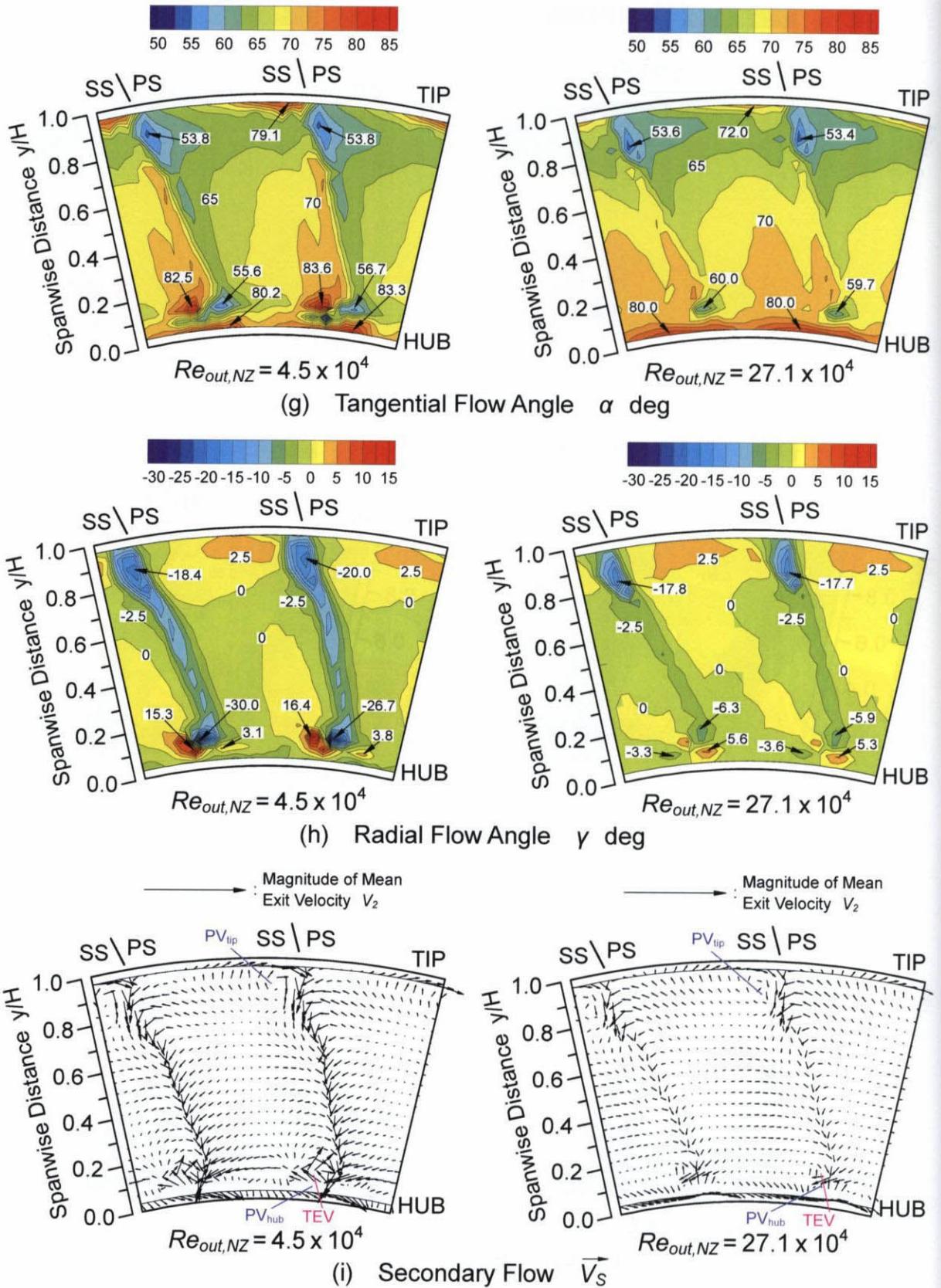


図 4.33 静翼出口の流れに与えるレイノルズ数の影響 (その 3)
 $Tu_{in} = 0.5\%$ での周方向流れ角, 半径方向流れ角, 二次流れの分布

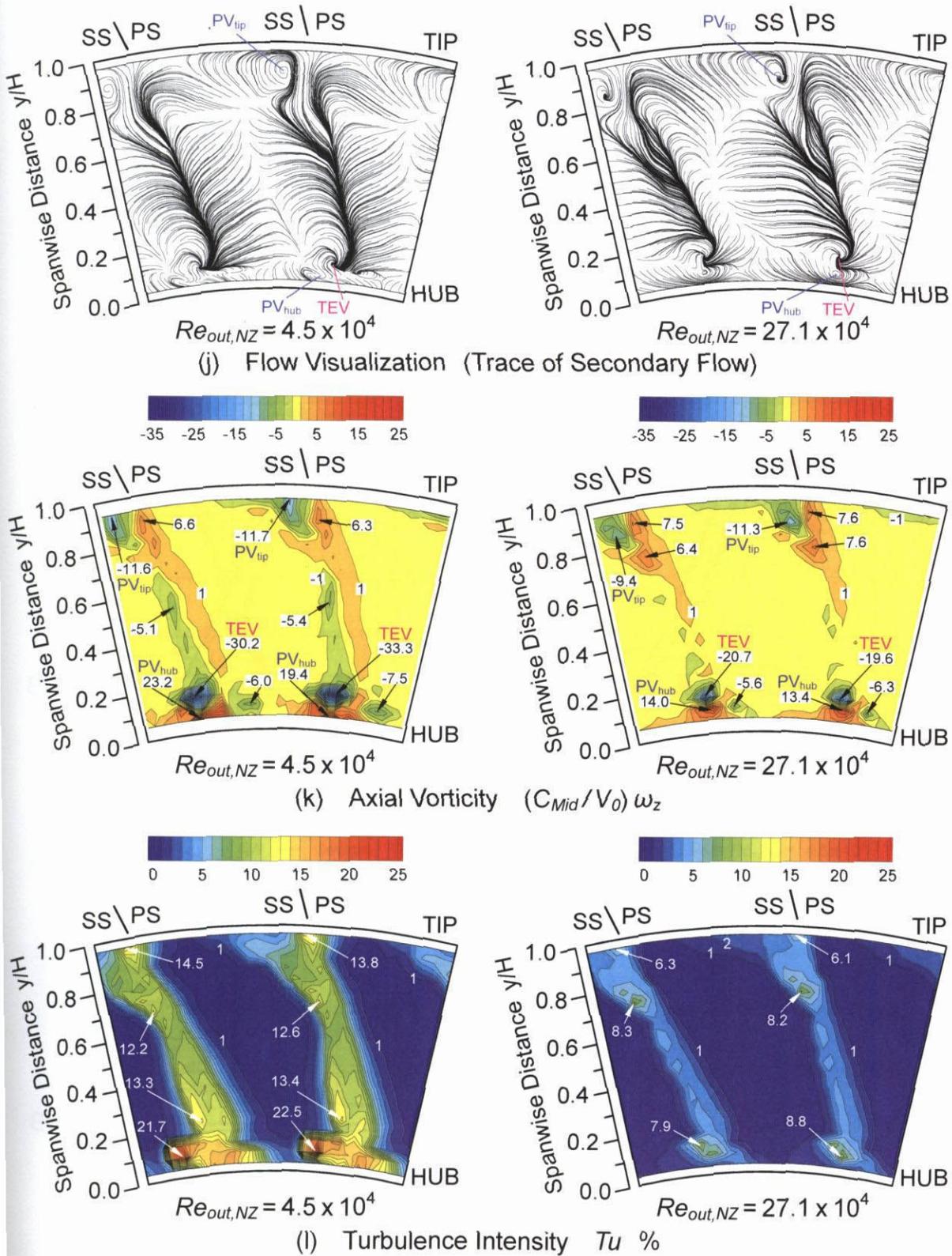
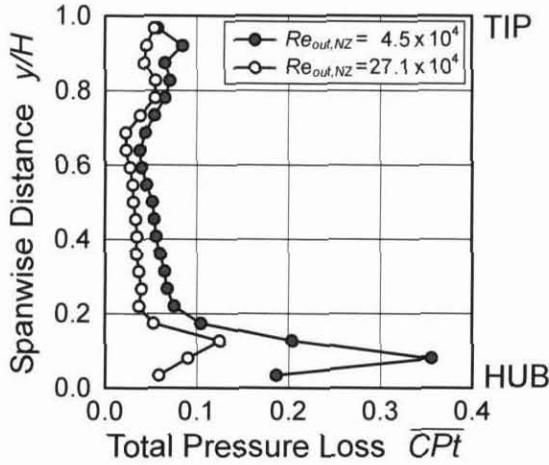
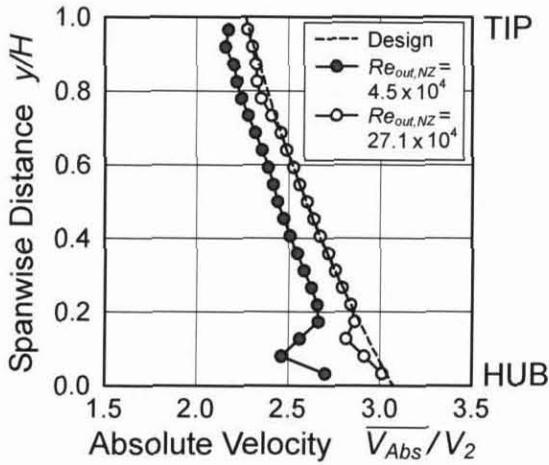
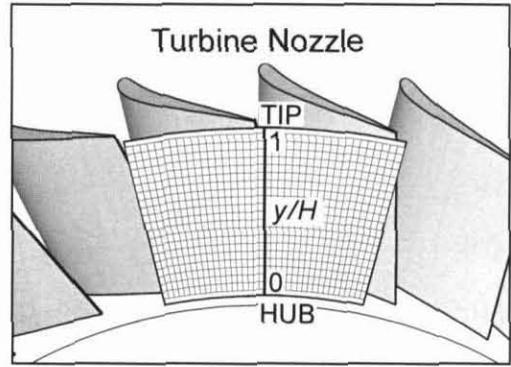


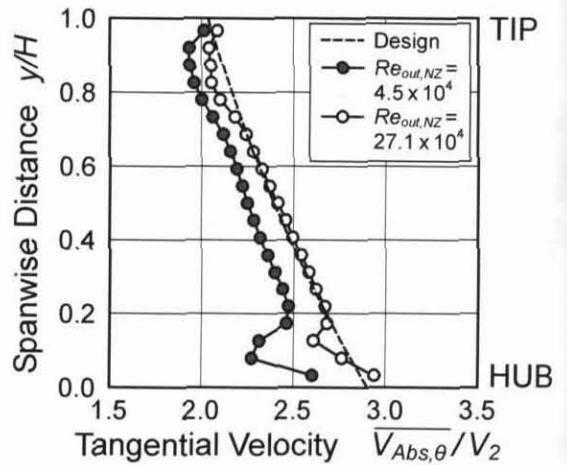
図 4.33 静翼出口の流れに与えるレイノルズ数の影響 (その4)
 $Tu_{in} = 0.5\%$ での二次流れの可視化, 軸方向渦度, 乱れ度の分布



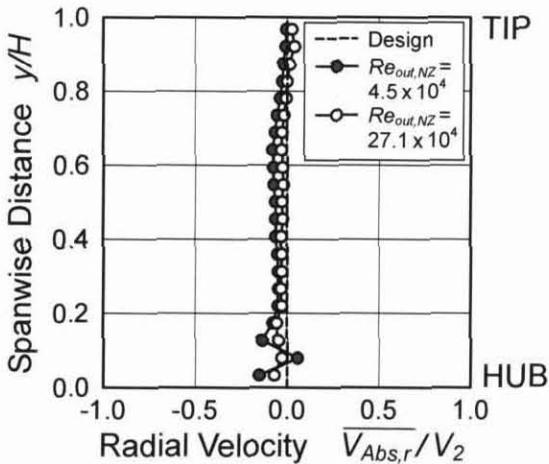
(a) 全圧損失



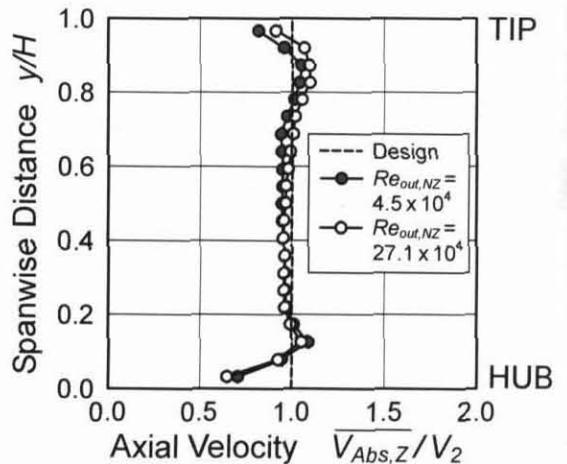
(b) 絶対速度



(c) 周方向速度



(d) 半径方向速度

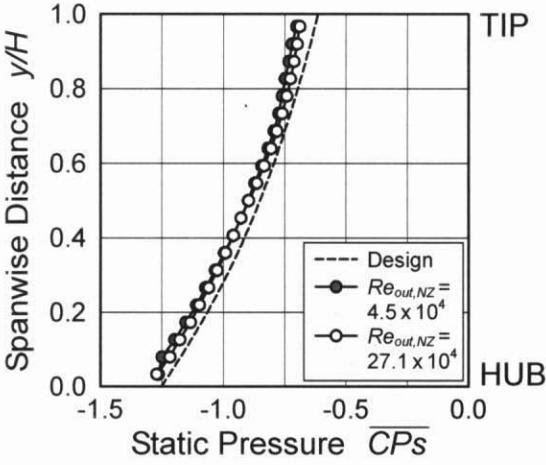


(e) 軸方向速度

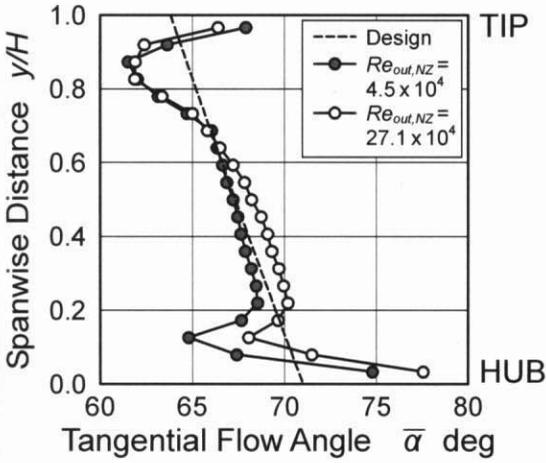
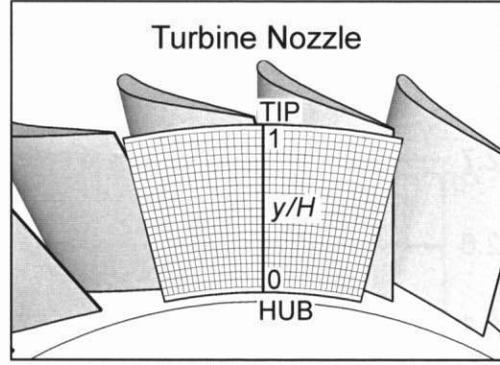
図 4.34 静翼出口流れの半径方向分布に与えるレイノルズ数の影響 (その1)
 $Tu_{in} = 0.5\%$ での全圧損失, 絶対速度, 周方向速度, 半径方向速度, 軸方向速度



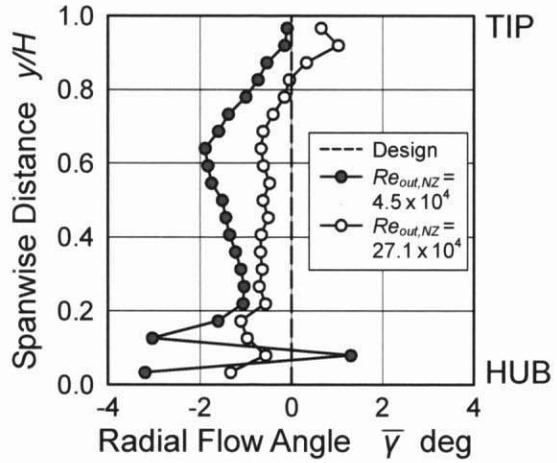
第4章 低レイノルズ数域における環状タービン静翼の三次元流れに与えるレイノルズ数の影響



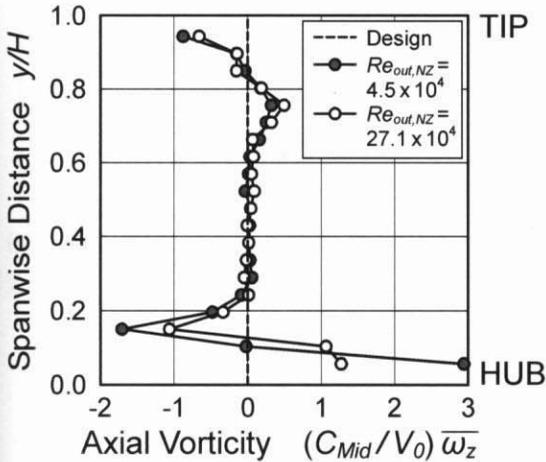
(f) 静圧



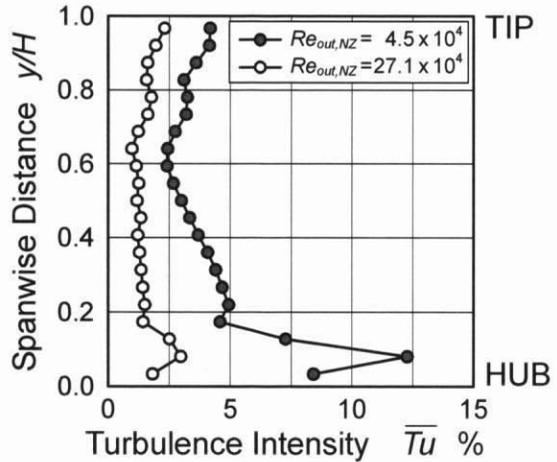
(g) 周方向流れ角



(h) 半径方向流れ角

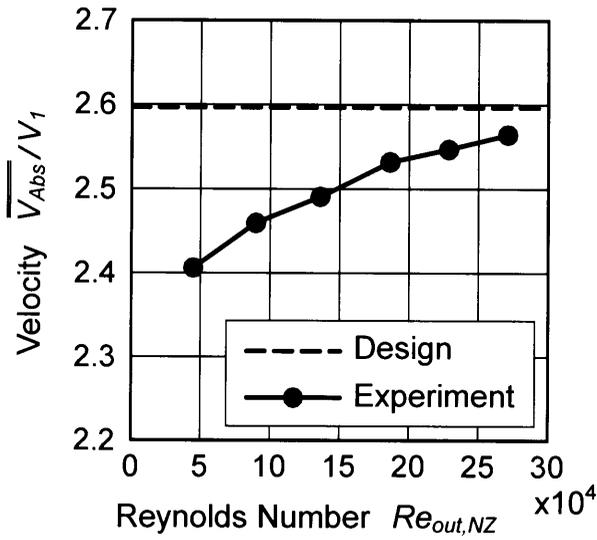


(i) 軸方向渦度

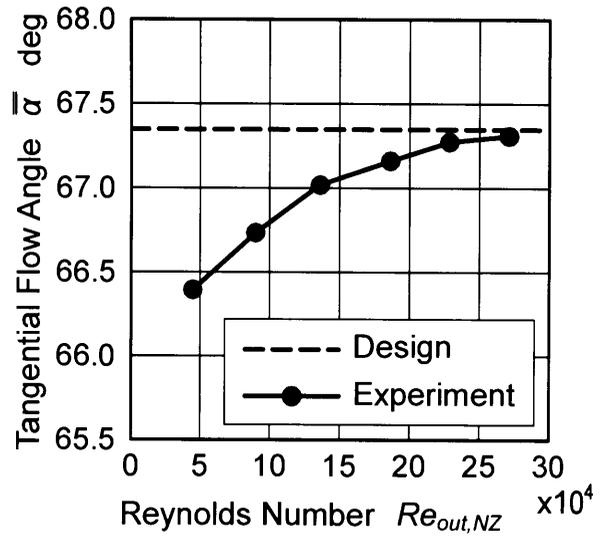


(j) 乱れ度

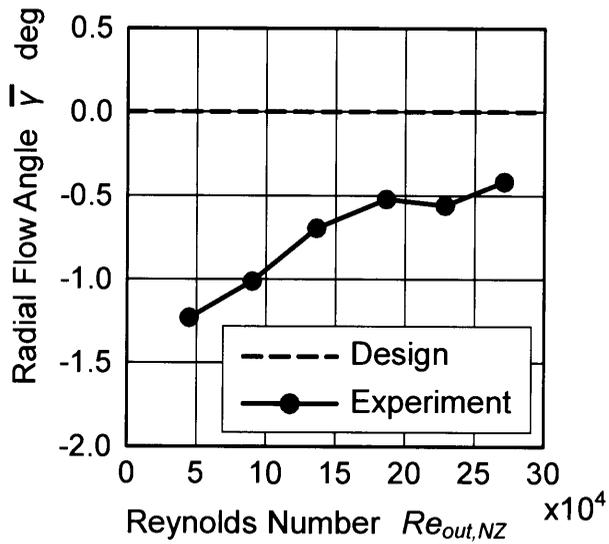
図 4.34 静翼出口流れの半径方向分布に与えるレイノルズ数の影響 (その2) $Tu_{in}=0.5\%$ での静圧, 周方向流れ角, 半径方向流れ角, 軸方向渦度, 乱れ度



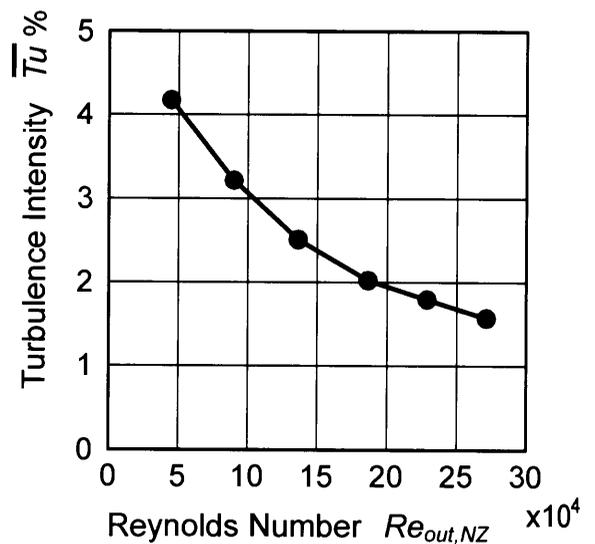
(a) 速度



(b) 周方向流れ角



(c) 半径方向流れ角



(d) 乱れ度

図 4.35 静翼出口での速度，流れ角，乱れ度の質量流量平均値に対するレイノルズ数の影響（主流乱れ度 $Tu_{in} = 0.5\%$ ）

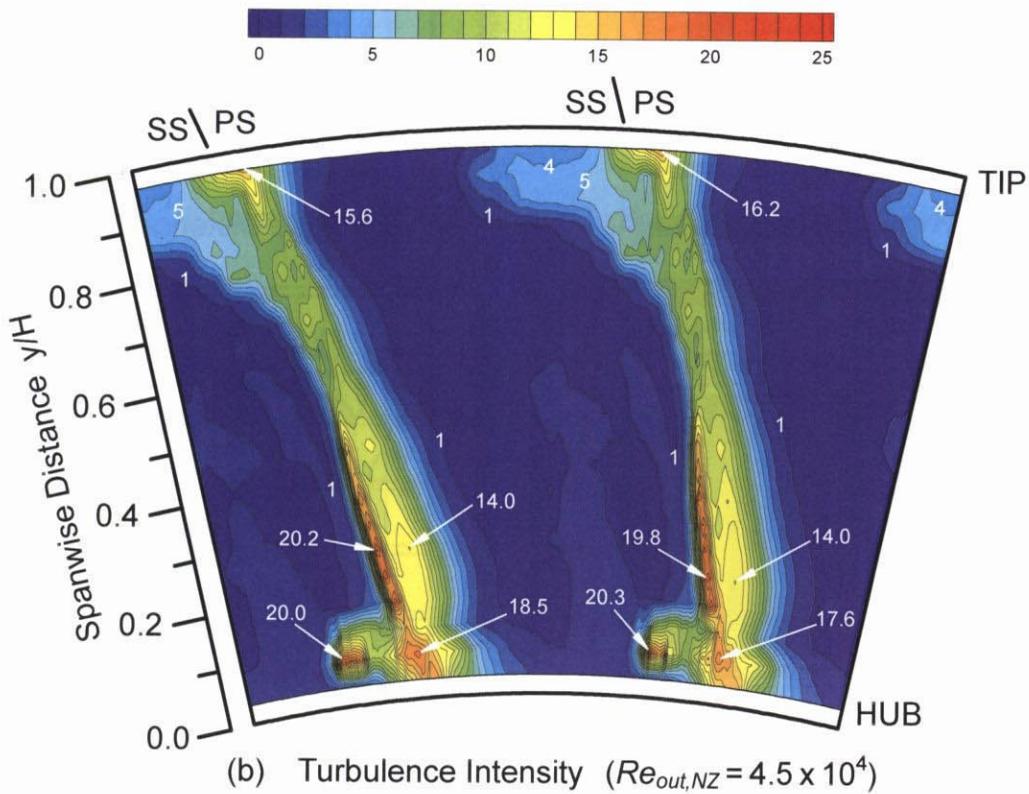
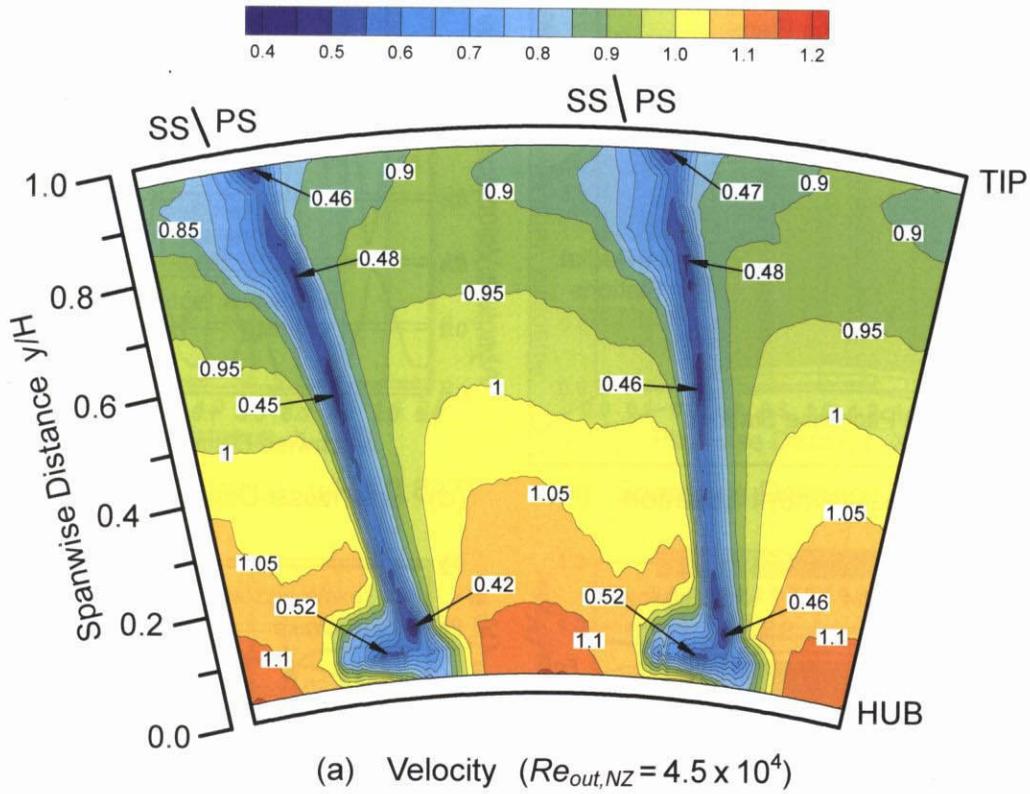
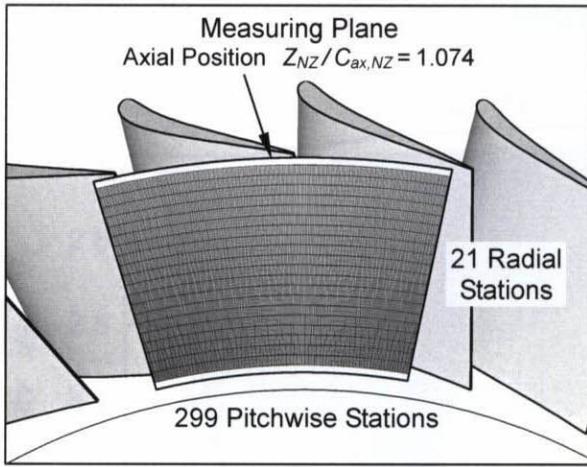
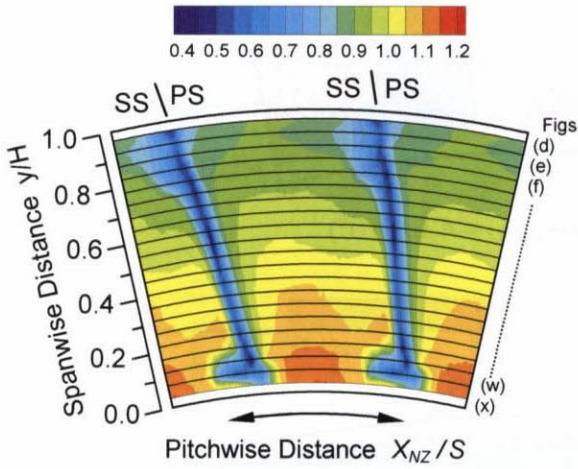


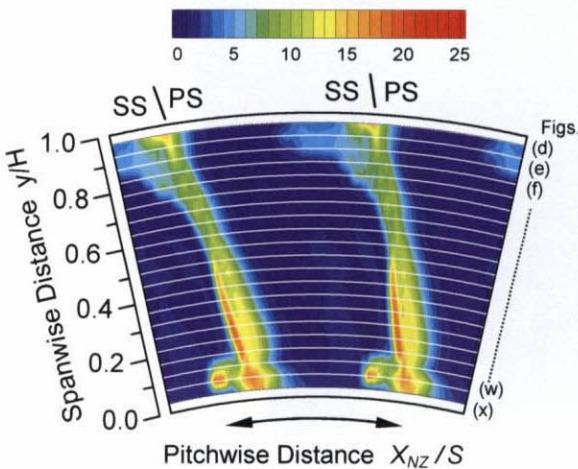
図 4.36 熱線流速計による静翼後流の詳細計測 (軸方向位置 $Z_{NZ}/C_{ax,NZ}=1.074$)
 $Re_{out,NZ}=4.5 \times 10^4$ での速度分布と乱れ度分布 (主流乱れ度 $Tu_{in}=0.5\%$)



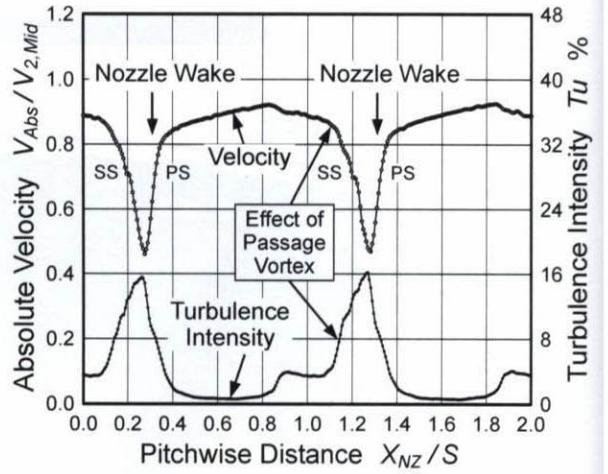
(a) Measurement Location



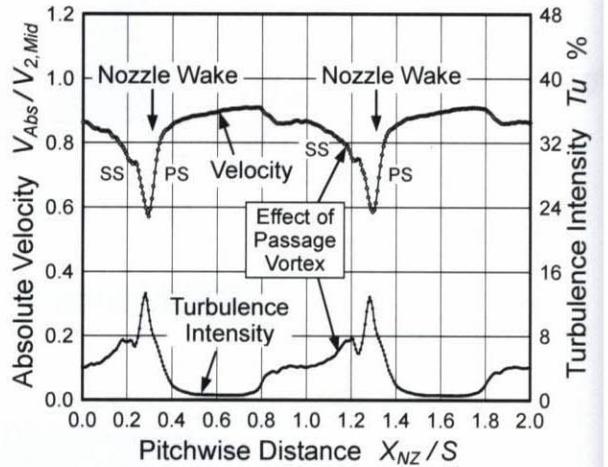
(b) Velocity Distribution



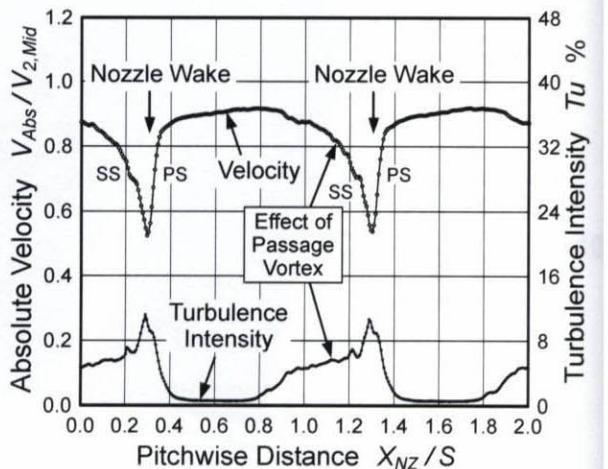
(c) Turbulence Intensity Distribution



(d) Spanwise Distance $y/H = 0.967$

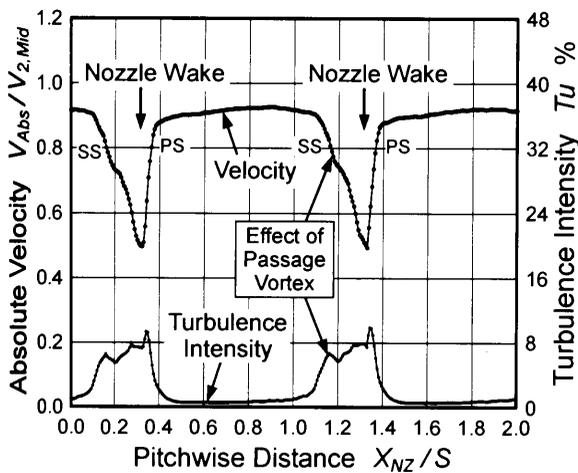


(e) Spanwise Distance $y/H = 0.920$

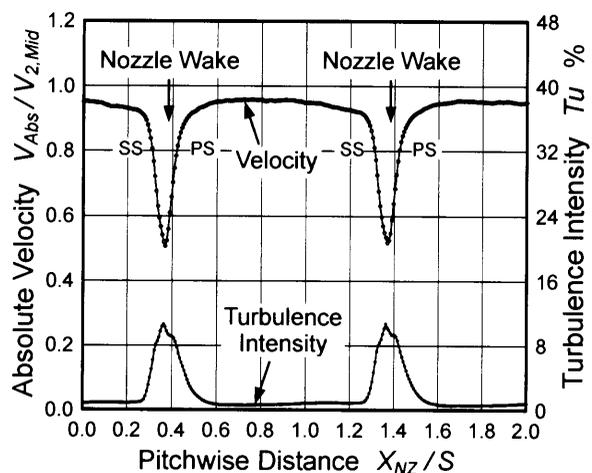


(f) Spanwise Distance $y/H = 0.873$

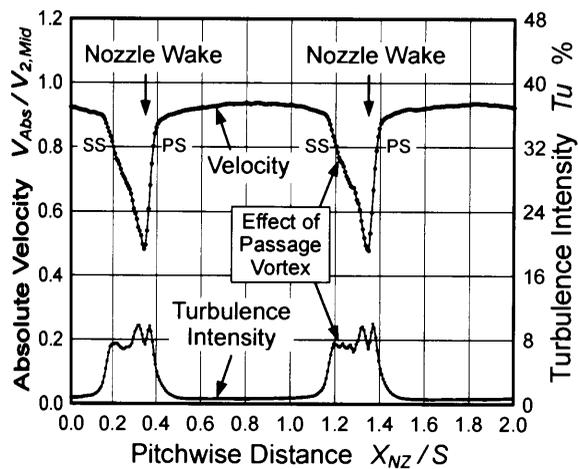
図 4.37 $Z_{NZ}/C_{ax,NZ} = 1.074$ における各半径位置での静翼後流 (その 1)
 $Re_{out,NZ} = 4.5 \times 10^4$ での速度と乱れ度のピッチ方向分布 ($Tu_{in} = 0.5\%$)



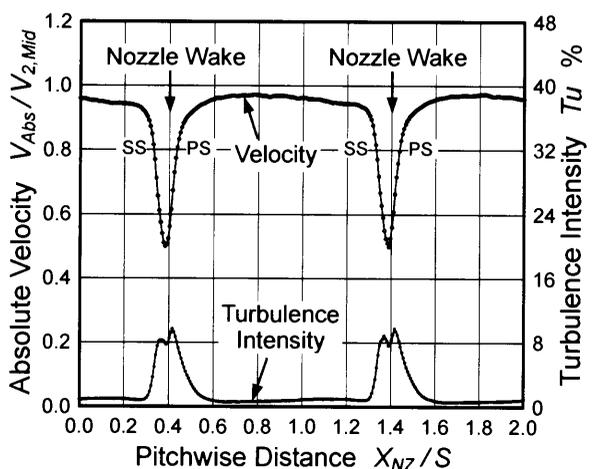
(g) Spanwise Distance $y/H = 0.827$



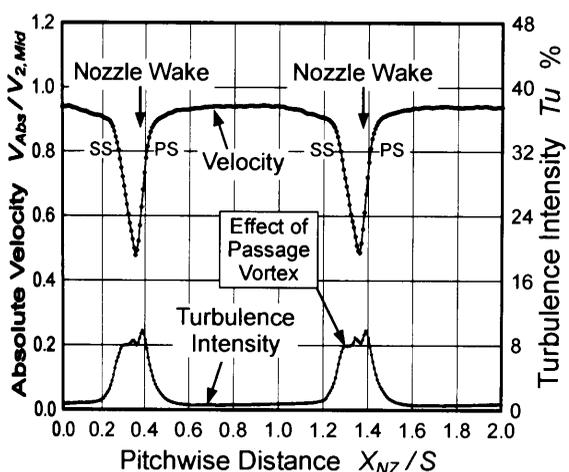
(i) Spanwise Distance $y/H = 0.687$



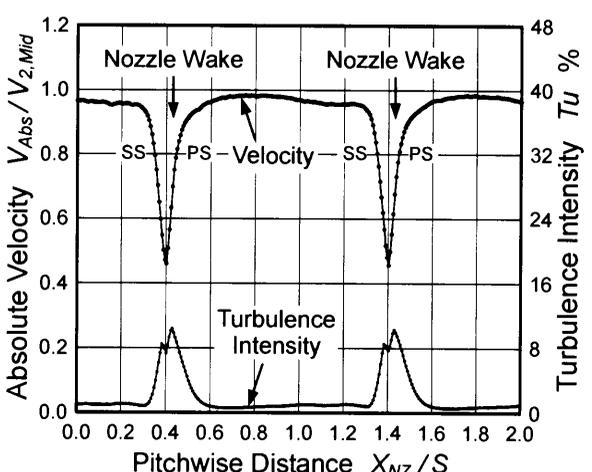
(h) Spanwise Distance $y/H = 0.780$



(k) Spanwise Distance $y/H = 0.640$



(j) Spanwise Distance $y/H = 0.733$

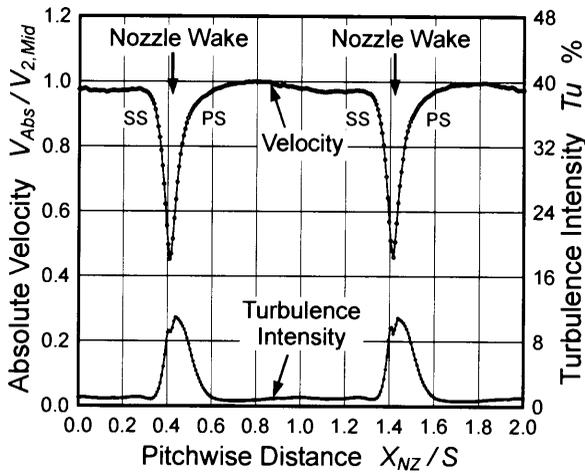


(l) Spanwise Distance $y/H = 0.593$

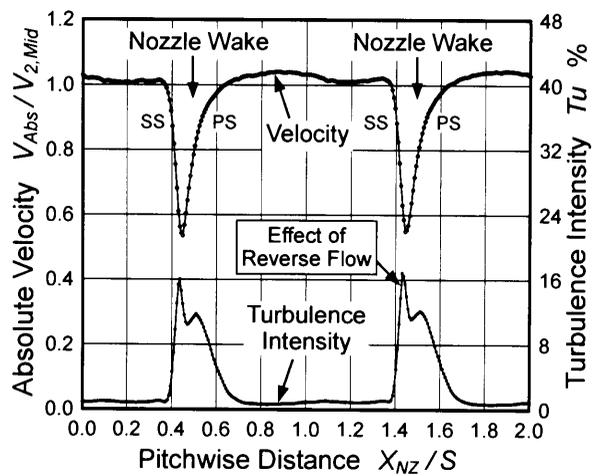
図 4.37

$Z_{NZ}/C_{ax,NZ} = 1.074$ における各半径位置での静翼後流 (その2)

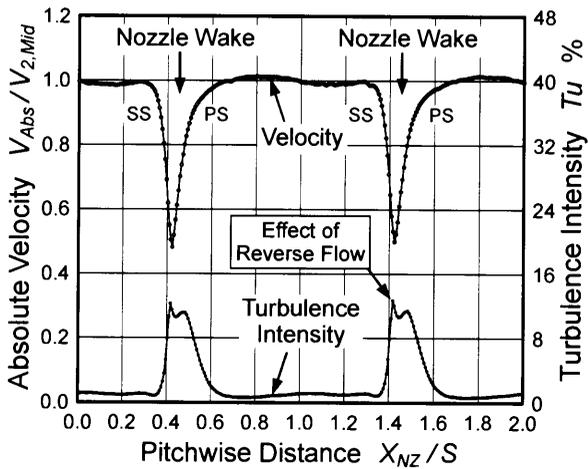
$Re_{out,NZ} = 4.5 \times 10^4$ での速度と乱れ度のピッチ方向分布 ($Tu_{in} = 0.5\%$)



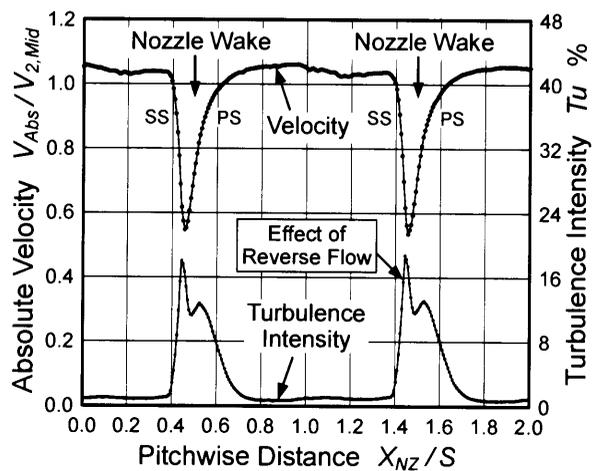
(m) Spanwise Distance $y/H = 0.547$



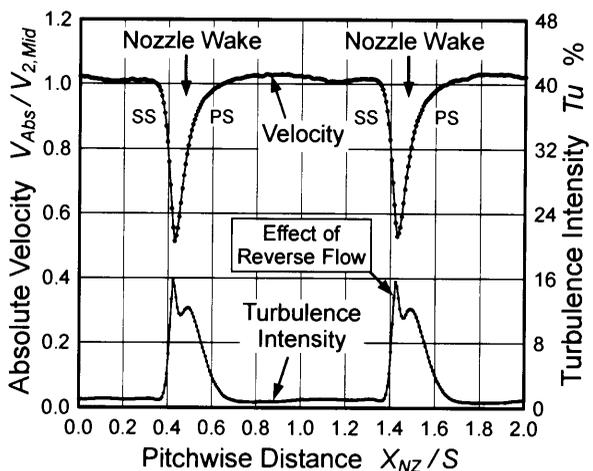
(p) Spanwise Distance $y/H = 0.407$



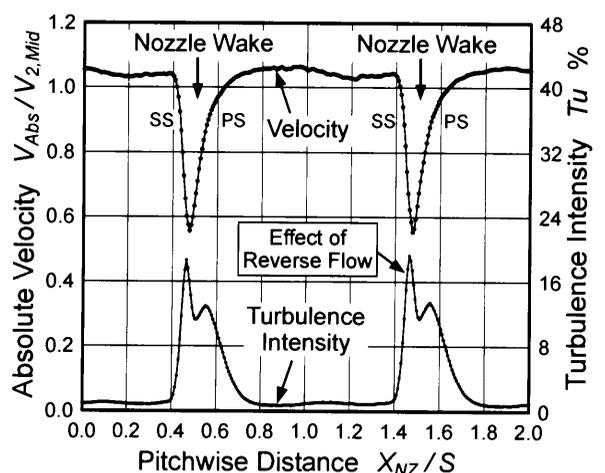
(n) Spanwise Distance $y/H = 0.500$



(q) Spanwise Distance $y/H = 0.360$

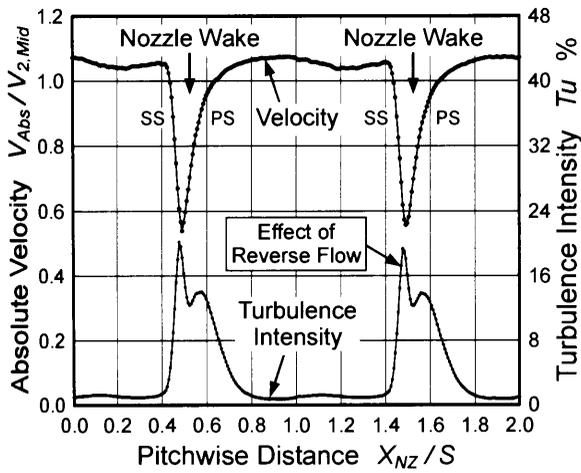


(o) Spanwise Distance $y/H = 0.453$

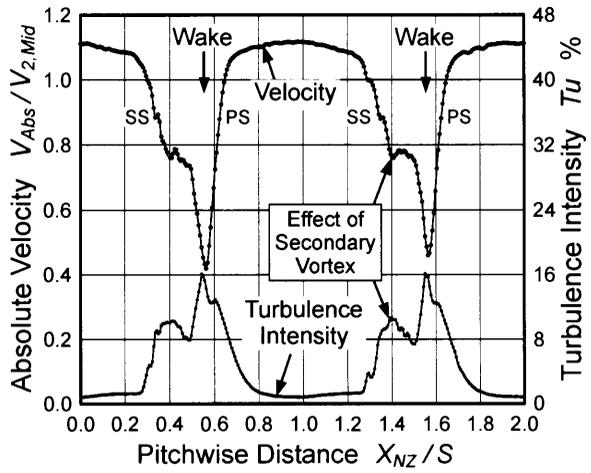


(r) Spanwise Distance $y/H = 0.313$

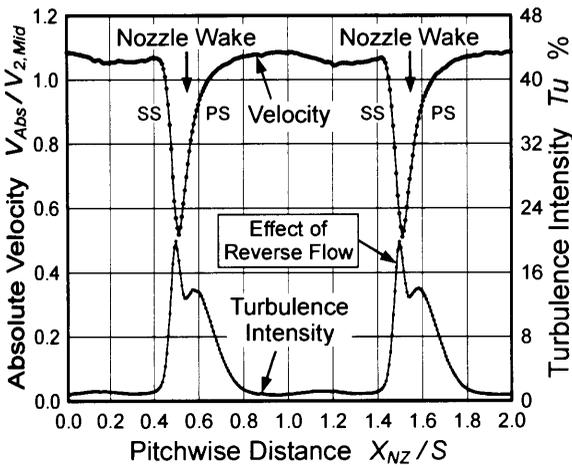
図 4.37 $Z_{NZ}/C_{ax,NZ} = 1.074$ における各半径位置での静翼後流 (その 3)
 $Re_{out,NZ} = 4.5 \times 10^4$ での速度と乱れ度のピッチ方向分布 ($Tu_{in} = 0.5\%$)



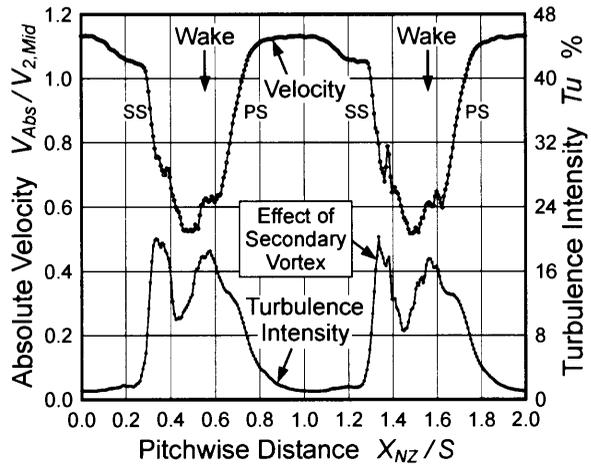
(s) Spanwise Distance $y/H = 0.267$



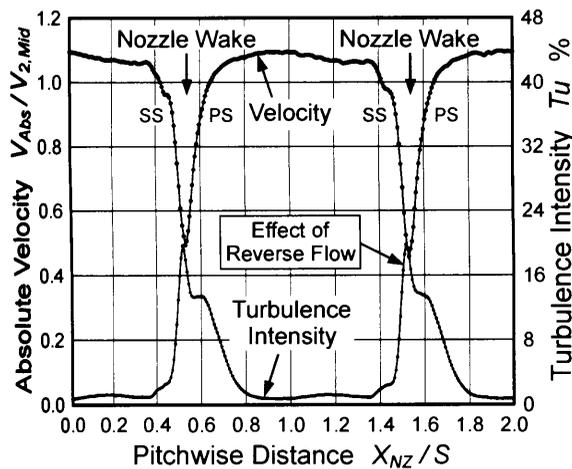
(v) Spanwise Distance $y/H = 0.127$



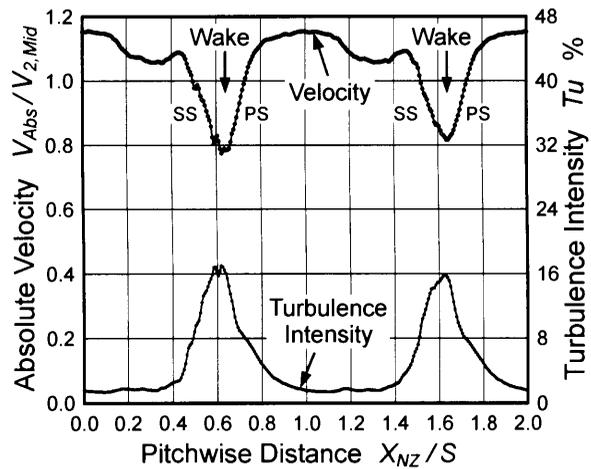
(t) Spanwise Distance $y/H = 0.220$



(w) Spanwise Distance $y/H = 0.080$



(u) Spanwise Distance $y/H = 0.173$



(x) Spanwise Distance $y/H = 0.033$

図 4.37 $Z_{NZ}/C_{ax,NZ} = 1.074$ における各半径位置での静翼後流 (その4)
 $Re_{out,NZ} = 4.5 \times 10^4$ での速度と乱れ度のピッチ方向分布 ($Tu_{in} = 0.5\%$)

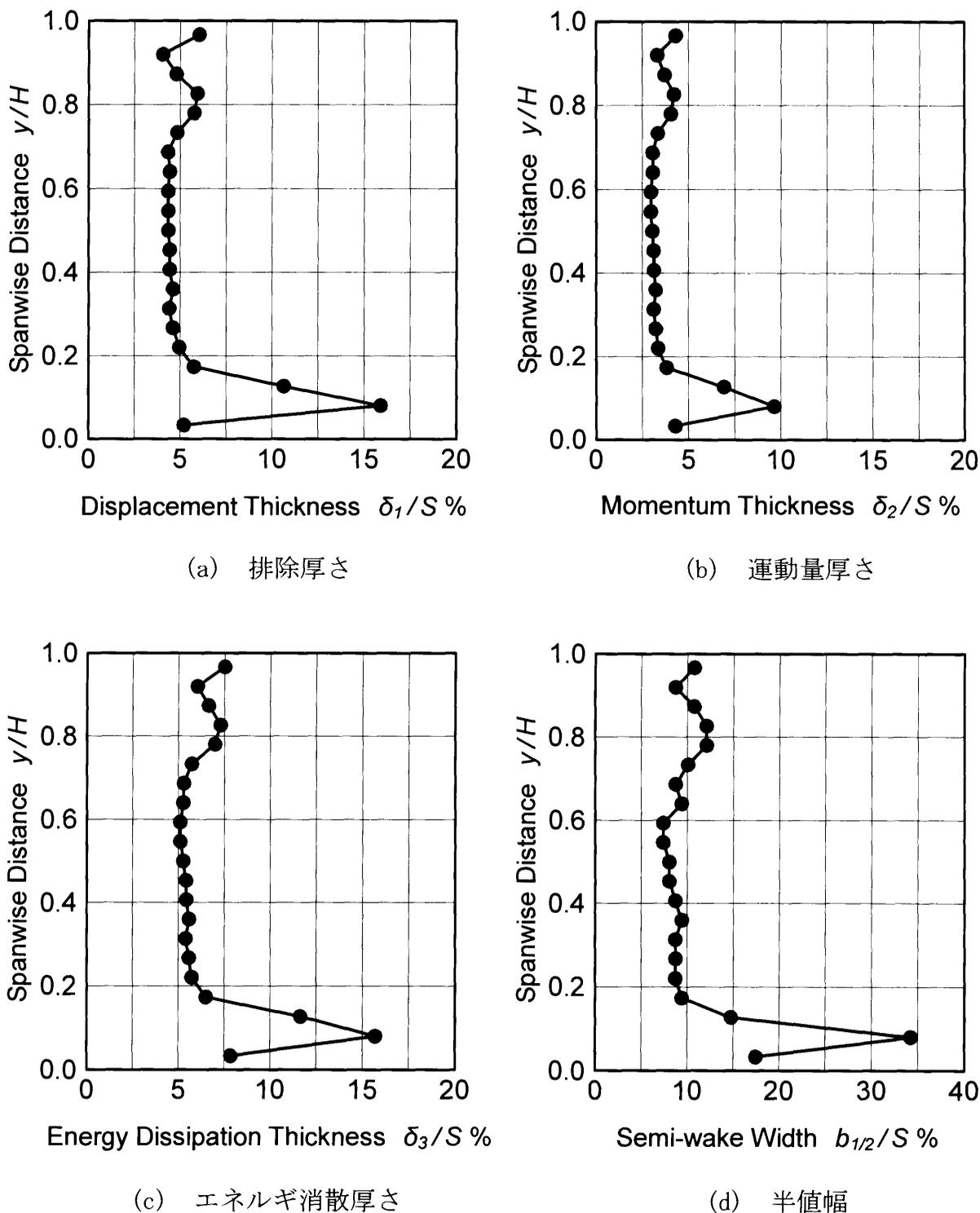
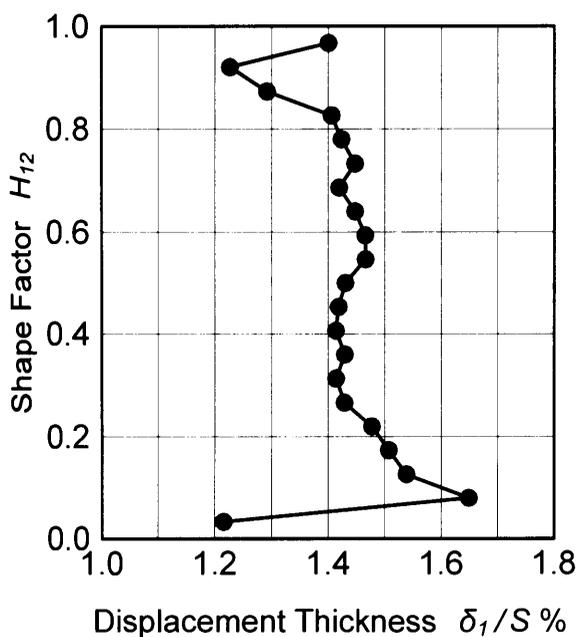
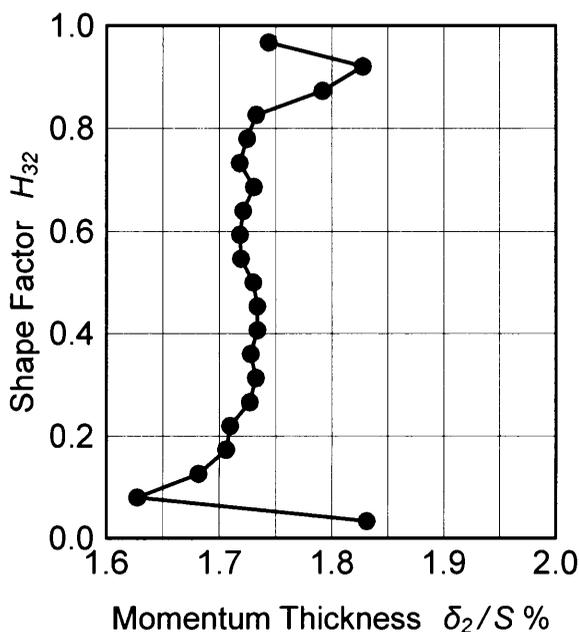


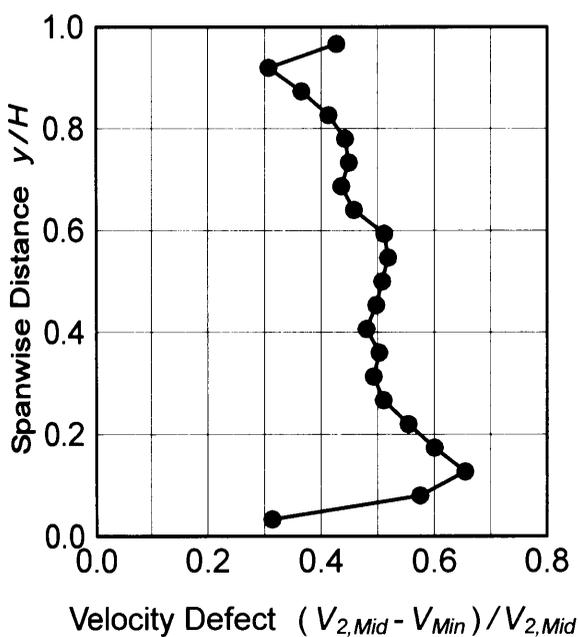
図 4.38 $Z_{NZ}/C_{ax,NZ}=1.074$ における各半径位置での境界層パラメータ (その1)
 $Re_{out,NZ}=4.5 \times 10^4$ での排除厚さ, 運動量厚さ, エネルギー消散厚さ,
 半値幅 (主流乱れ度 $Tu_m=0.5\%$)



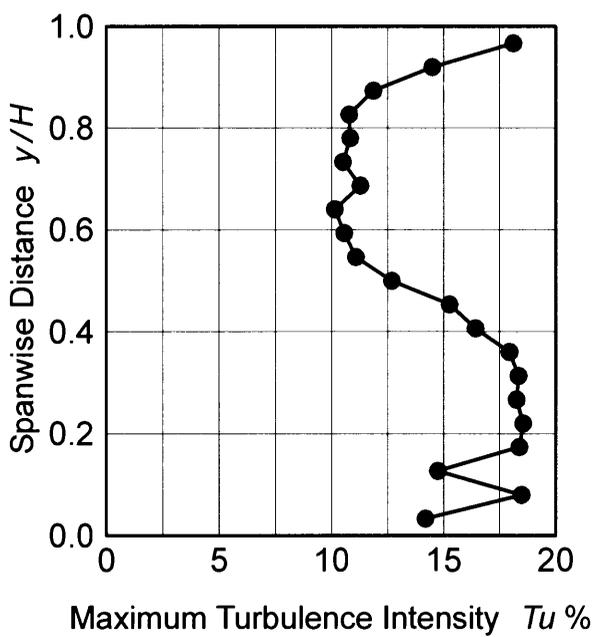
(e) 形状係数 $H_{12} (= \delta_1/\delta_2)$



(f) 形状係数 $H_{32} (= \delta_3/\delta_2)$

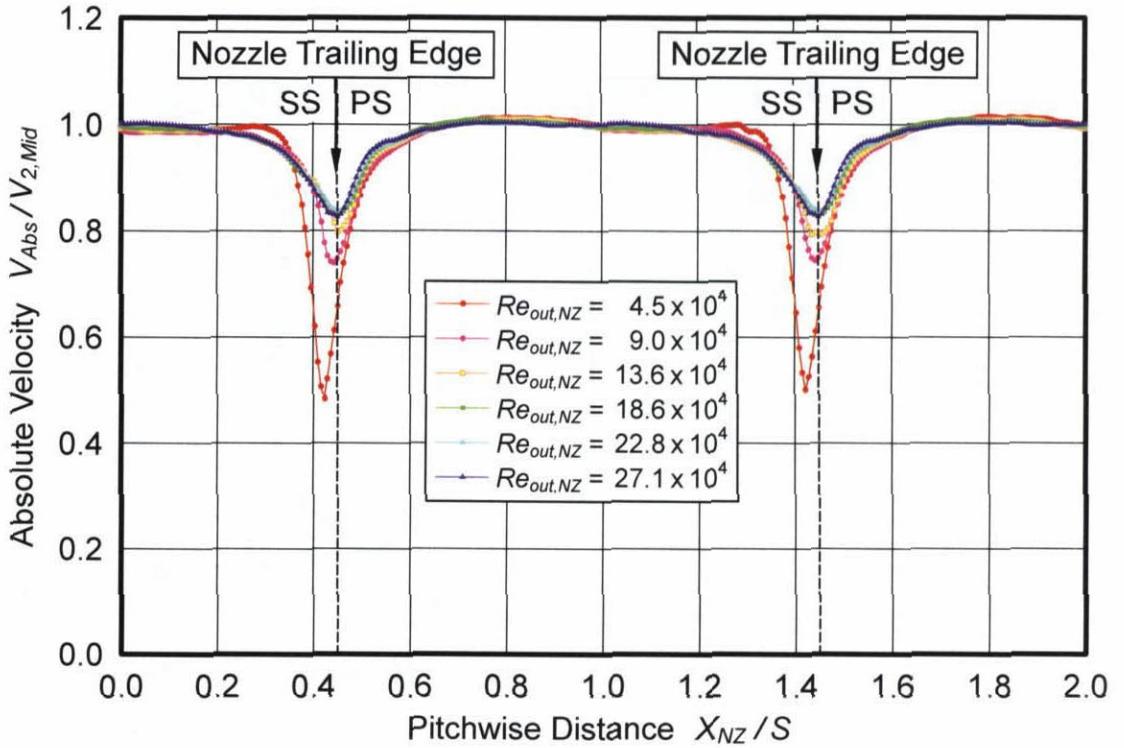


(g) 速度欠損 (最大値)

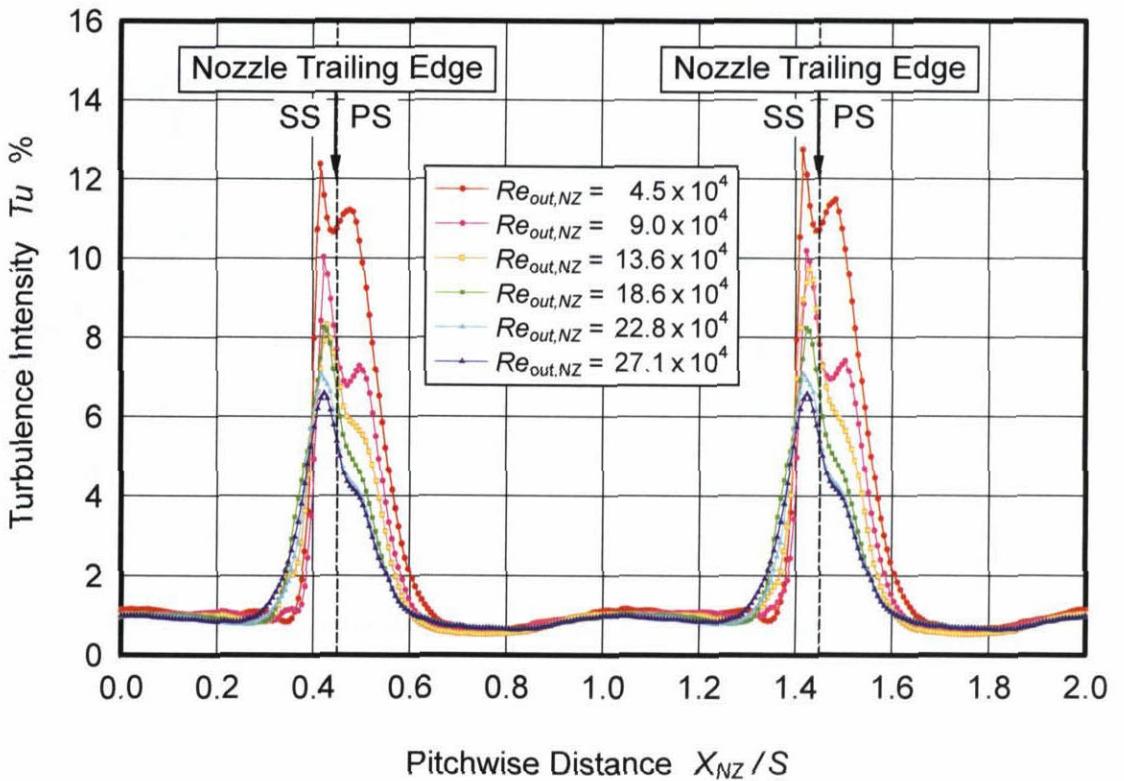


(h) 最大乱れ度

図4.38 $Z_{NZ}/C_{ax,NZ}=1.074$ における各半径位置での境界層パラメータ (その2)
 $Re_{out,NZ}=4.5 \times 10^4$ での形状係数 H_{12} , 形状係数 H_{32} , 速度欠損 (最大値),
 最大乱れ度 (主流乱れ度 $Tu_{in}=0.5\%$)

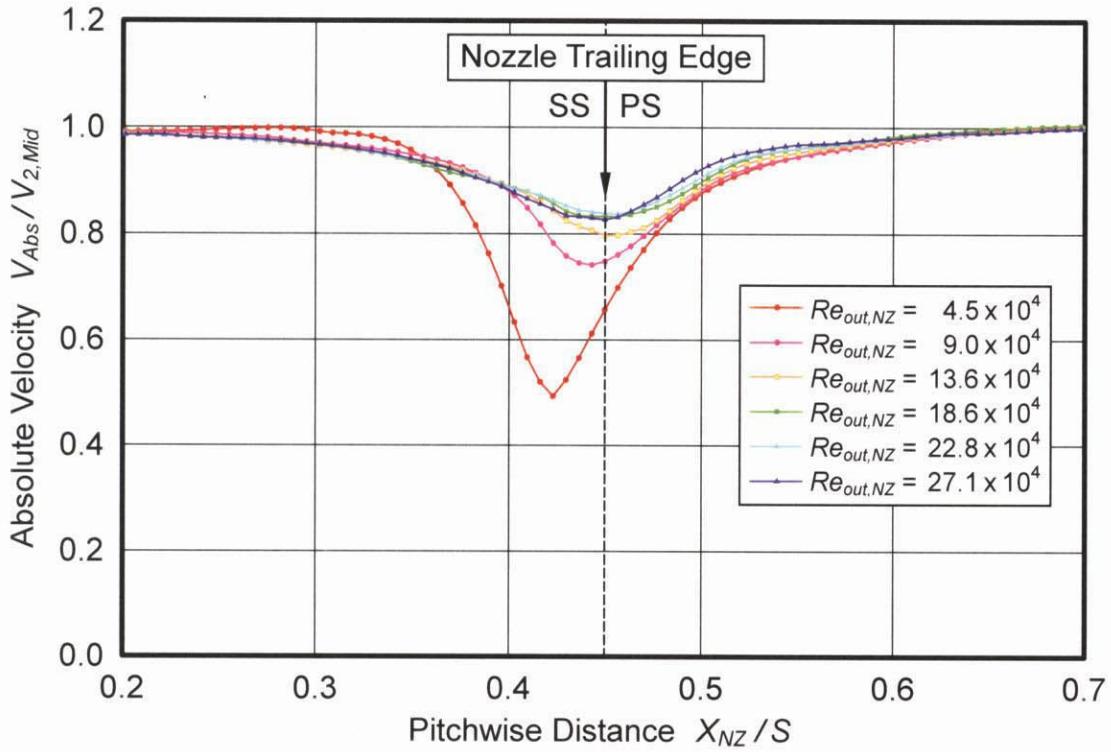


(a) Velocity

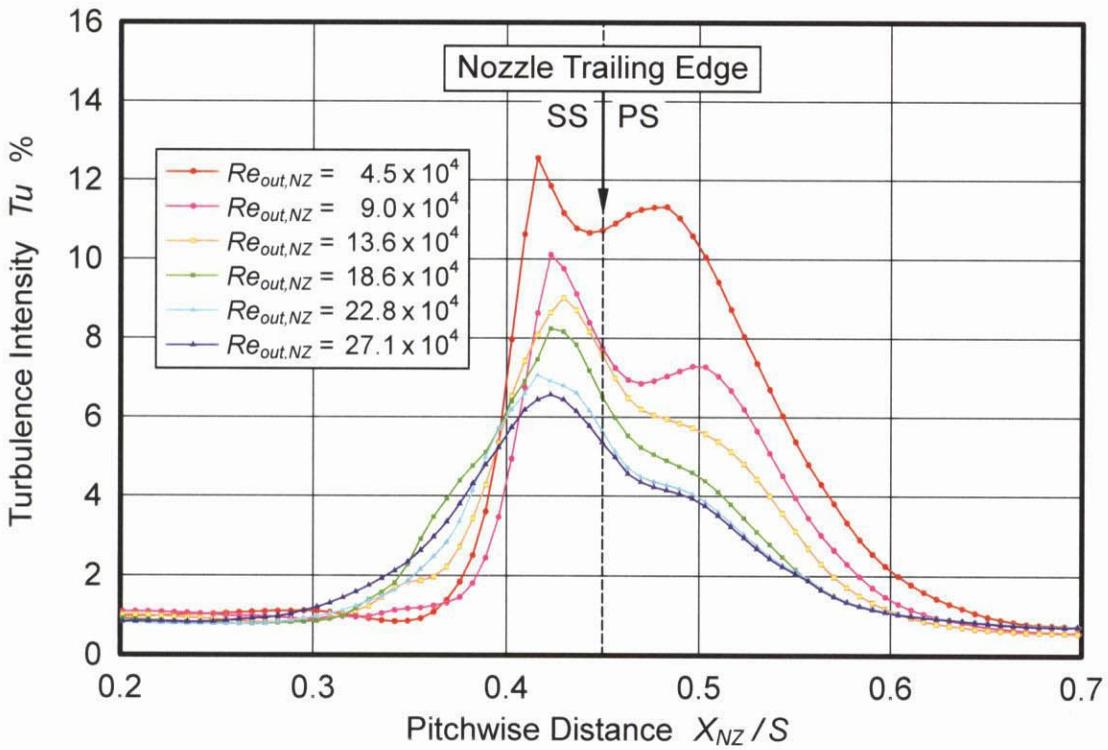


(b) Turbulence Intensity

図 4.39 各レイノルズ数における静翼ミッドスパンの後流の詳細計測 $Z_{NZ}/C_{ax,NZ} = 1.074$ での速度と乱れ度のピッチ方向分布 ($Tu_m = 0.5\%$)



(a) Velocity



(b) Turbulence Intensity

図 4.40 各レイノルズ数での静翼ミッドスパンの後流（翼 2 枚の平均値）
 $Z_{NZ}/C_{ax,NZ}=1.074$ での速度と乱れ度のピッチ方向分布 ($Tu_{in}=0.5\%$)