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# Numerical Study of a Novel Nose-Type Freestream MHD Generator Concept Using the Ideal MHD Equations

新たな頭部装着MHD自由流エネルギー抽出法に関する理想MHD数値解析

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An original Freestream MHD Generator, as a part of a freestream energy bypass system concept is presented. According to numerical simulation results, the system is able to extract energy from the incoming flow field in front of an aerospace vehicle by turning it into electricity, and in the process reduce the apparent Mach number in front of the aerospace vehicle. This electromagnetic flow manipulation concept is a new approach for freestream energy conservation which is important for future hypersonic airbreathing aerospace vehicles. The numerical simulation method of ideal MHD and MHD generators is also explained in detail.