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VISUALIZATION TECHNOLOGY OF NUMERICAL SIMULATION FOR LAUNCH VEHICLE DURING FLIGHT

Abstract

Traditional scene simulation can show the flight orbit, attitude etc. of whole or parts of launch vehicle, but cannot depict the flow field of Aerodynamic and Aerothermal characteristics as well as interference between rocket plumes and external flow. Sampling numerical simulations were carried out on launch vehicle during flight, and then Proper Orthogonal Decomposition (POD) method was used to interpolate the results according to the flight sequence. The interpolated results were transferred to visualization system through interprocess communication. When conducting flight simulation of launch vehicle, the flight sequence can be given by the simulation system. Thus real-time numerical simulation results can be depicted, which can provide direct visual research means for the designers.