ASTRODYNAMICS SYMPOSIUM (C1)
Guidance, Navigation, and Control (2) (6)

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DEIMOS PRECISION LANDER GUIDANCE, NAVIGATION AND CONTROL DESIGN

Abstract

A design concept is proposed here for a precision landing system that enables a spacecraft to soft-land and depart from the surface of a low gravity body such as the Mars moon, Deimos. Spacecraft attitude and body rate control functions are based on heritage planetary designs. New functions have been developed to address the unique challenges of translation guidance, navigation and control while in proximity to Deimos including trajectory guidance algorithms for the multiple mission phases, optical terrain relative navigation and thruster selection for multi-axis control. Successful landing is demonstrated with high fidelity six degree-of-freedom simulation.