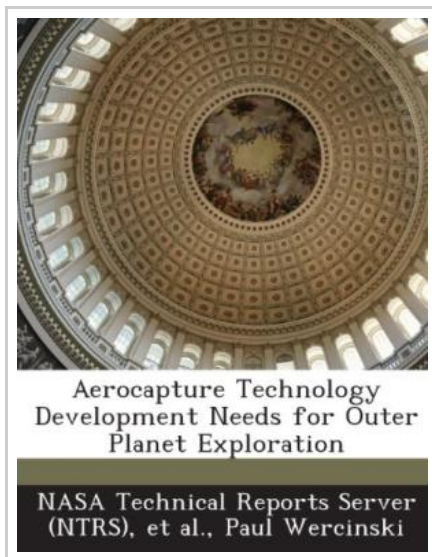


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Aerocapture Technology Development Needs for Outer Planet Exploration

By Paul Wercinski

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 26 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. The purpose of this white paper is to identify aerocapture technology and system level development needs to enable NASA future mission planning to support Outer Planet Exploration. Aerocapture is a flight maneuver that takes place at very high speeds within a planet's atmosphere that provides a change in velocity using aerodynamic forces (in contrast to propulsive thrust) for orbit insertion. Aerocapture is very much a system level technology where individual disciplines such as system analysis and integrated vehicle design, aerodynamics, aerothermal environments, thermal protection systems (TPS), guidance, navigation and control (GN and C) instrumentation need to be integrated and optimized to meet mission specific requirements. This paper identifies on-going activities, their relevance and potential benefit to outer planet aerocapture that include New Millennium ST7 Aerocapture concept definition study, Mars Exploration Program aeroassist project level support, and FY01 Aeroassist In-Space Guideline tasks. The challenges of performing aerocapture for outer planet missions such as Titan Explorer or Neptune Orbiter require investments to advance the technology readiness of the aerocapture technology disciplines for the unique application of outer planet aerocapture. This white paper will...

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