Aerocapture Technology Developments by the In-Space Propulsion Technology Program

Michelle Marie Munk
NASA Langley Research Center

This paper will explain the investment strategy, the role of detailed systems analysis, and the hardware and modeling developments that have resulted from the past 5 years of work under NASA's In-Space Propulsion Technology (ISPT) Program, Aerocapture investment area. The organizations that have been funded by ISPT over that time period received awards from a 2002 NASA Research Announcement. They are: Lockheed Martin Space Systems, Applied Research Associates, Inc., Ball Aerospace, NASA's Ames Research Center, and NASA's Langley Research Center. Their accomplishments include improved understanding of entry aerothermal environments, particularly at Titan, demonstration of aerocapture guidance algorithm robustness at multiple bodies, manufacture and test of a 2-meter Carbon-Carbon "hot structure," development and test of evolutionary, high-temperature structural systems with efficient ablative materials, and development of aerothermal sensors that will fly on the Mars Science Laboratory in 2009. Many of NASA's current programs are benefitting from the sustained ISPT support for Aerocapture, component technologies are mature enough to be infused on entry missions, and the aerocapture system technology is ready to be validated in flight.

6th International Planetary Probe Workshop Conference Proceedings
June 21-27, 2008
Atlanta, Georgia, USA