

# Small Explorer Mission to Set Solar System Boundaries

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A satellite that will make the first map of the boundary between the Solar System and interstellar space has been selected as part of NASA's Small Explorer program. The Interstellar Boundary Explorer (IBEX) mission will be launched in 2008.

IBEX is the first mission designed to detect the edge of the Solar System. As the solar wind from the sun flows out beyond Pluto, it collides with the material between the stars, forming a shock front. IBEX contains two neutral atom imagers designed to detect particles from the termination shock at the boundary between the Solar System and interstellar space.

IBEX also will study galactic cosmic rays, energetic particles from beyond the Solar System that pose a health and safety hazard for humans exploring beyond Earth orbit. IBEX will make these observations from a highly elliptical orbit that takes it beyond the interference of the Earth's magnetosphere. Dr. David McComas of Southwest Research Institute in San Antonio will lead IBEX. It will cost approximately \$134 million. The Small Explorer program (SMEX) consists of rapid, small, and focused science exploration missions.

"Explorer missions continue to efficiently address NASA's objectives, because of the competitive character of the Explorer Program. Dr. McComas and his co-investigators submitted a compelling proposal. It had sufficient details to convince other independent scientists, engineers, technologists, cost analysts, and program managers this is an exciting and breakthrough experiment for NASA to sponsor," said NASA's Deputy

Associate Administrator for the Science Mission Directorate, Dr. Ghassem Asrar.

"The mission will continue the NASA Explorer Program's successful record of scientific exploration of space over the past four decades, and it supports the Vision for Space Exploration," Asrar added.

NASA has decided to continue studying another proposed mission, the Nuclear Spectroscopic Telescope Array (NuSTAR). It is the first telescope capable of detecting black holes in the local universe with 1,000 times more sensitivity than previous missions sensitive to energetic X-rays. A decision on proceeding to flight development with NuSTAR will be made by early 2006. Dr. Fiona Harrison of the California Institute of Technology, Pasadena, Calif. is the Principal Investigator for NuSTAR.

The Explorer Program is designed to provide frequent, low-cost access to space for physics and astronomy missions with small to mid-sized spacecraft. NASA has successfully launched six SMEX missions since 1992. The missions include the Reuven Ramaty High Energy Solar Spectroscopic Imager (RHESSI) launched in February 2002, and the Galaxy Evolution Explorer launched in April 2003. The next SMEX mission is the Aeronomy of Ice in the Mesosphere (AIM) mission, scheduled to launch in September 2006. AIM will study the Earth's highest clouds for clues to climate change.

The selected proposals were among 29 SMEX and eight mission-of-opportunity proposals submitted to NASA in May 2003. They were in response to an Explorer Program Announcement of Opportunity issued in February 2003. NASA selected six proposals in November 2003 for detailed feasibility studies.

Funded by NASA, up to \$450,000 each, these studies focus on cost,

management, and technical plans, including small business involvement and educational outreach. NASA's Goddard Space Flight Center, Greenbelt, Md., manages the Explorer Program for the Science Mission Directorate.

Source: NASA

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