NASA Investigates Revolutionary Space Exploration Concepts

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GREENBELT, Md., June 16 (SPX) -- The NASA Institute for Advanced Concepts (NIAC) has selected its 2005 Phase 1 awards. The Phase 1 awards are 12, six-month study proposals beginning in September that could revolutionize space exploration.

If the concepts prove feasible, space explorers may one day deploy superconducting cables that magnetically inflate to form the structure of a space telescope one kilometer across; launch a satellite with a magnetic scoop to mine the radiation belts surrounding Earth for antimatter fuel; or enjoy a feast from a food replicator that creates a variety of meals from a few common ingredients.

"These new Phase I awards have the potential for enabling future missions that are not thought to be possible with current systems. As a result of the process of exploring advanced concepts, new enabling technologies may be identified that could impact near-term plans and missions," said Dr. Robert Cassanova of the Universities Space Research Association (USRA). Cassanova is the NIAC director. The USRA runs NIAC for NASA.

NIAC was created in 1998 to solicit revolutionary concepts from people and organizations outside the agency that could advance NASA's missions. The proposals push the limits of known science and technology, and positive results are not expected for at least a decade or more.

Proposals selected for Phase 1 awards typically receive up to $75,000 for a six-month study that validates the viability of the concept and identifies challenges that must be overcome to make the proposal a reality.

Proposals selected for the 2005 Phase 1 awards:

A Contamination-Free Ultrahigh-Precision Formation Flight Method Based on Intracavity Photon Thrusters and Tethers (Principle Investigator (PI): Dr. Young K. Bae, Bae Institute, Tustin, Calif.)

Extraction of Antiparticles Concentrated in Planetary Magnetic Fields (PI: Mr. James Bickford, Draper Laboratory, Cambridge, Mass.)

Customizable, Reprogrammable, Food Preparation, Production and Invention System (PI: Dr. Eric Bonabeau, Icosystem Corporation, Cambridge, Mass.)

Scalable Flat-Panel Nano-Particle MEMS/NEMS Propulsion Technology for Space Exploration in the 21st Century (PI: Dr. Brian Gilchrist, University of Michigan, Ann Arbor, Mich.)

Antimatter Harvesting in Space (PI: Dr. Gerald P. Jackson, Hbar Technologies, LLC, Chicago)

Multi-MICE: A Network of Interactive Nuclear Cryoprobes to Explore Ice Sheets on Mars and Europa (PI: Dr. George Maise, Plus Ultra Technologies, Inc., Stony Brook, N.Y.)

Artificial Neural Membrane Flapping Wing (PI: Dr. Pamela A. Menges, Aerospace Research Systems, Inc., Cincinnati)

Lorentz-Actuated Orbits: Electrodynamic Propulsion without a Tether

(PI: Dr. Mason Peck, Cornell University College of Engineering, Ithaca, N.Y.)

Magnetically Inflated Cable System for Space Applications (PI: Dr. James Powell, Plus Ultra Technologies, Stony Brook, N.Y.)

Ultra-High Resolution Fourier Transform X-ray Interferometer (PI: Dr. Herbert Schnopper, Smithsonian Astrophysical Observatory, Cambridge, Mass.)

Positron-Propelled and Powered Space Transport Vehicle for Planetary Missions (PI: Dr. Gerald A. Smith, Positronics Research LLC, Santa Fe, N.M.)

Modular Spacecraft with Integrated Structural Electrodynamic Propulsion (PI: Mr. Nestor Voronka, Tethers Unlimited, Bothell, Wash.)