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Title: JPL's current and future programs that respond to NASA's vision of Space Exploration

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Abstract: NASA is defining its future exploration of space in terms of grand themes of science and challenges. The Space Science Themes include (1) The Sun-Earth Connection, (2) the Exploration of the Solar System, (3) Origins of Galaxies, Stars, Planetary Systems and the conditions under which life can emerge, and (4) the Structure and Evolution of the Universe. JPL is the lead center for the Exploration of the Solar System and contributes significantly to each of the other themes. Associated with each of these themes are major technical challenges. In order to address technical challenges in Earth and Space Science, JPL is developing internal capabilities some of which are contained within our newly formed Centers of Excellence. The Centers of Excellence are (1) Space Microelectronics Technology, (2) Space Interferometry, (3) In-Situ Exploration and Sample Return, (4) Spacecraft Mission Architecture and Design, (5) Deep Space Communications and Navigation Systems (including inflatable technology for the deployment of large antennae, and (6) Integrated Space Micro-systems. Other technical fields, some of which cut across the Centers of Excellence are (1) Autonomous Advanced Spacecraft, (2) Active Microwave Remote Sensing, (3) Optical Submillimeter/IR Remote Sensing, and (4) Space Mission Information & Computing Technology. JPL is taking steps to align it discretionary resources to enhance the development and use of these emerging technologies. The authors will present guidelines concerning how these new opportunities could be of benefit to universities.