PURDUE UNIVERSITY

School of Aeronautics and Astronautics

NASA Technology Drives Exploration (And How You Can Get Involved)

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COLLOQUIUM

Abstract
The Apollo missions blazed a path to deep space, and today NASA is working on the next giant leap – our path to Mars. Technology drives exploration, and we're building on the Apollo program's accomplishments to test and fly transformative, cutting edge technologies today for tomorrow's missions. But unlike the Apollo missions, where the public could only watch, we want you to get involved and be a part of the journey.

Bio
Dr. David W. Miller is the NASA chief technologist, serving as the agency's principal advisor and advocate on NASA technology policy and programs. NASA's Office of the Chief Technologist coordinates, tracks and integrates technology investments across the agency and works to infuse innovative discoveries into future missions. The chief technologist leads NASA technology transfer and technology commercialization efforts, facilitating internal creativity and innovation, and works directly with other government agencies, the commercial aerospace community and academia.

Miller serves as chief technologist through an intergovernmental personnel agreement with the Massachusetts Institute of Technology, where he is the Jerome C. Hunsaker Professor in the Department of Aeronautics and Astronautics and was the Director of the Space Systems Laboratory.

Miller has worked with a broad range of NASA programs including the space shuttle, the International Space Station (ISS), the JWST Product Integrity Team, and the NASA CubeSat Launch Initiative. Most recently, he was the Principal Investigator for the Regolith X-ray Imaging Spectrometer for the OSIRIS-REx asteroid sample return mission, and a NASA Institute of Advanced Concepts fellow. He was the principal investigator for the Synchronized Position, Hold, Engage and Reorient Experimental Satellites, or SPHERES, project on the ISS, and the co-principal investigator for the Middeck Active Control Experiment, which was flown on STS-67 and again on the ISS. He also recently served as the Vice Chair of the Air Force Scientific Advisory Board.

At M.I.T. Miller's work focuses on developing reconfigurable spacecraft concepts using proximity operations and docking of modular satellites with universal, standardized interfaces. He has also helped develop a technique to control satellite formations, without the need for propellant, using high temperature super-conducting electromagnets. Miller developed a unique, multi-semester, hands-on class at M.I.T. that immerses undergraduates in the end-to-end lifecycle process of developing and operating aerospace vehicles, some of which evolved into ISS laboratories. He has extended this educational model to the graduate level to provide Air Force officers with hands-on satellite development experience with five satellite systems currently under development. Miller earned his undergraduate and graduate degrees from MIT, and has been part of the faculty there since 1997.