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Lifetime Achievement Keynote

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Fred Y. Hadaegh
NASA-Jet Propulsion Laboratory
California Institute of Technology
USA

Time: 13:20-14:20

Day: Monday June 4, 2018

Chair: Syoji, Japan

Venue: Stevenson Ballroom A

The Enabling Technologies for Future Space Missions

ABSTRACT: In an age of proliferating technologies, we must innovate and leverage the right ones for the unique challenges of space exploration. For space, technology carries a specific meaning: the means to enable exciting new missions.

There have been many advances in engineering at the nanoscale to develop sensitive new particle detectors capable of determining the direction of the source, to extend sensitive CCD imaging arrays to operate in the ultraviolet and X-ray and to generate new approaches to block the light from a distant star and observe the faint exoplanets circling nearby. We have achieved many new capabilities by leveraging

technologies that have seen rapid advances for mission applications. For example, the advantages of rapid 3-D printing have been pushed to an additional fourth “dimension,” namely by constructing space systems whose functions evolve over the course of the mission. This presentation will provide an overview of the emerging space missions and the breakthrough technologies that will enable these missions over the next two decades.

Bio: Fred Hadaegh joined JPL in 1984 after receiving his Ph.D. in electrical engineering from USC, as well as bachelor’s and master’s degrees in the same subject from the University of Texas, Austin.

For more than two decades, he supervised JPL’s Guidance & Control Analysis Group. He also previously led the development of guidance and control technologies for spacecraft formation flying, autonomous rendezvous and docking for NASA missions and Department of Defense programs.

Hadaegh is a JPL Fellow and Senior Research Scientist, Fellow of the Institute of Electronics and Electrical Engineers (IEEE) and Fellow of the American Institute of Aeronautics and Astronautics (AIAA). Among his numerous awards are NASA’s Exceptional Service and Exceptional Achievement Medals. His research interests include optimal estimation and control as applied to distributed spacecraft. He has published extensively on mathematical modeling of uncertain systems, parameter identifiability of dynamical systems, identification and control of large space structures, and autonomous control of distributed spacecraft systems.