

"An Evolvable Space Telescope for Future Astronomical Missions"

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Astronomical flagship missions after the James Webb Space Telescope (JWST) will require lower cost space telescopes and science instruments. Innovative spacecraft-electro-optomechanical system architectures matched to the science requirements are needed for observations for exoplanet characterization, cosmology, dark energy, galactic evolution formation of stars and planets, and many other research areas. The needs and requirements to perform this science will continue to drive us toward larger and larger apertures. Recent technology developments in precision station keeping of spacecraft, interplanetary transfer orbits, wavefront/sensing and control, laser engineering, macroscopic application of nano-technology, lossless optical designs, deployed structures, thermal management, interferometry, detectors and signal processing enable innovative telescope/system architectures with break-through performance. Unfortunately, NASA's budget for Astrophysics is unlikely to be able to support the funding required for the 8-m to 16-m telescopes that have been studied for the follow-on to JWST using similar development/assembly approaches without accounting for too large of a portion of the Astrophysics Division's budget. Consequently, we have been examining the feasibility of developing an "Evolvable Space Telescope" that would be 3 to 4-m when placed on orbit and then periodically augmented with additional mirror segments, structures, and newer instruments to evolve the telescope and achieve the performance of a 16-m space telescope. This talk reviews the technologies required for such a mission, identifies candidate architectures, and discusses different science measurement objectives for these architectures.



About our speaker: Dr. Ronald Polidan received a Ph.D. (in astrophysics) from UCLA and has worked for over 40 years with NASA science missions over a wide range of mission sizes and all NASA science disciplines, and is currently the Manager of Science and Civil Weather Systems in GeoINT, Sensing, and Science, in Space Systems at Northrop Grumman Aerospace Systems. Past responsibilities include serving as Director of Science Operations for the Princeton Experiment Package for NASA's Orbiting Astronomical Observatory-3 (*Copernicus*); a science team member on the Ultraviolet Spectrometers (UVS) on board NASA's *Voyager 1* and *Voyager 2* spacecraft; *Hubble Space Telescope* (HST) Project

Scientist for Operations; and ORFEUS-SPAS II Mission Scientist. He has also held other various NASA leadership roles including ones at the Goddard Space Flight Center, and was also selected by the Air Force Research Laboratory as a Distinguished Space Fellow. Dr. Polidan is the recipient of numerous NASA awards including the NASA Medal for Exceptional Service and has published over 100 papers.

Wednesday, June 17, 2015

Reception: 6:00; Dinner: 7:00;

Annual Business Meeting & Talk: 8:00

Cost: \$35. After June 15 - \$45

OSSC Student Members: free, \$15 after June 15

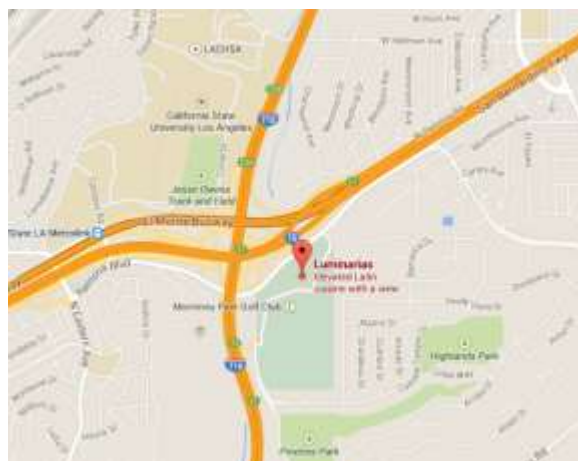
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3500 Ramona Boulevard, Monterey Park, CA

On-line Registration: www.ossoc.org or

Contact: Kenn Bates, Events@ossoc.org,

562-634-1435



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