



SEMINAR

Introduction to the Advanced Autonomous Multiple Spacecraft Laboratory at Embry-Riddle Aeronautical University, Daytona Beach, FL, USA

by

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Introduction by Aurelia Sole e Guido Masiello

16th | **3:00 p.m.**
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Imagine a world where every ground vehicle depleting its fuel or malfunctioning is abandoned on the road. The transportation systems will be compromised in matter of days. In the space domain, this type of scenario has been everyday reality since the Sputnik, particularly in Earth orbits ranging from upper LEO to GEO (low Earth to geostationary orbits).

The talk will illustrate the activities of the Advanced Autonomous Multiple Spacecraft (ADAMUS) laboratory and will then focus on one of its research thrusts: propellant-less control of spacecraft formation flying via atmospheric differential drag (DD) forces. The exploitation of residual drag forces in LEO for control purposes has been one of the focuses of the ADAMUS group for several years. This has led to innovative control strategies, ways to predict the behavior of the LEO atmosphere, and novel spacecraft designs.

After presenting the technical details of DD, the problem of space debris will be addressed. In fact, the skillsets developed during these years attracted the attention of NASA, and it will be illustrated how ADAMUS, and NASA are now shaping the future of propellant-less fine control of spacecraft removal from LEO and above.

Biography

Dr. Riccardo Bevilacqua is a Professor of Aerospace Engineering at Embry-Riddle Aeronautical University (ERAU). He also serves as interim vice provost for academic affairs. He holds a M.Sc. in Aerospace Engineering (2002, cum laude), and a Ph.D. in Applied Mathematics (2007), both from the University of Rome, "Sapienza", Italy. Dr. Bevilacqua is the recipient of two Young Investigator Awards, from AFOSR (2012) and ONR (2013), of the 2014 Dave Ward Memorial Lecture Award from the Aerospace Controls and Guidance Systems Committee, and of multiple Air Force Summer Fellowships. His research interests focus on spacecraft formation flight, space robotics and warheads/spacecraft fragment fly-out predictions. He has authored and co-authored more than 150 journal and conference publications on the topics. He is an AIAA Associate Fellow and IAA Member. He is the founder and chair of the IAA conference on Space Situational Awareness.

