



University of Pavia

Ph.D. School of Electrical and Electronics Engineering and Computer Science

Seminar Series

CubeSats for Remote Sensing: Design, Analysis, and Implementation

Prof. William J. Blackwell

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Polo Didattico Ingegneria, Università degli Studi di Pavia – Via Ferrata, 5 – Pavia

Abstract: The CubeSat standard was created in year 1999 to facilitate access to space for university students, but, since then, the standard has been adopted by hundreds of organizations worldwide. CubeSat developers include not only universities and educational institutions, but also private firms and government organizations, as such standard facilitates frequent and affordable access to space, piggybacking on other launch opportunities. This Seminar Series will expose the attendees to the multi-faceted aspects of a Cubesat-based Earth Observation project, highlighting challenges and potentials of this mission design paradigm.

Bio: Bill Blackwell received the S.M. and Sc.D. degrees in electrical engineering and computer science from the Massachusetts Institute of Technology (MIT), Cambridge, MA, USA, in 1995 and 2002, respectively. Since 2002, he has been with the Lincoln Laboratory, MIT, where he is currently an Associate Leader of the Applied Space Systems Group. He serves or has previously served on the NASA Atmospheric Infrared Sounder and NPP science teams, the Joint Polar Satellite System Sounding Operational Algorithm Team, and the National Academy of Sciences Committee on Radio Frequencies. He was the Integrated Program Office Sensor Scientist for the Advanced Technology Microwave Sounder on the Suomi National Polar Partnership launched in 2011 and the Atmospheric Algorithm Development Team Leader for the National Polar-Orbiting Environmental Satellite System Microwave Imager/Sounder. He has served as the Principal Investigator on the MicroMAS-1, MicroMAS-2, and MiRaTA microwave sounding CubeSat missions and is currently PI on the NASA TROPICS Earth Venture mission (tropics.ll.mit.edu). His current research interests include atmospheric remote sensing, including the development and calibration of airborne and spaceborne microwave and hyperspectral infrared sensors, retrieval of geophysical products from remote radiance measurements, and the application of electromagnetic, signal processing, and estimation theory.

Organizer

Prof. Fabio Dell'Acqua

Ph.D. Coordinator

Prof. P. Di Barba

**Dates, times, locations and topics
(duration: 2 academic hours each)**

Date	Time (24h)	Room	Topic (tentative)
Mon Apr 8, 2019	14:00	E 8	Overview, physical foundations of remote sensing from space
Tue Apr 9	11:00	Magenta Seminar	An overview of instrumentation for atmospheric remote sensing from space
Tue Apr 9	16:00	E 4	Elements of mission design and analysis; small satellite constellations
Thu Apr 11	14:00	F 2	CubeSat systems, Part I - guidance and control, propulsion, power systems, communications systems
Fri Apr 12	16:00	E 1	CubeSat systems, Part II - thermal control, command and control, software, structural design/analysis, integration and testing
Mon Apr 15	14:00	E 8	Mission operations and ground segment
Tue Apr 16	11:00	Magenta Seminar	Calibration and data processing