



Calibration Seminar

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Title: Lunar Metrology for Satellite Instrument Calibration

Speaker: Dr. Steven Brown, Sensor Science Division,
National Institute of Standards and Technology (NIST)

Date & Time: Friday, Feb. 17th, 1:30pm - 3:00pm

Location: Conference Room 4102 (4th floor), ESSC Building (free parking)
5825 University Research Ct., College Park, MD 20740

Abstract: The Moon light has been consistently shining on the Earth for more than a billion years. However, our knowledge of the Absolute Lunar Irradiance is limited (with uncertainty up to ~10%). Why this matters? Scientists around the world recognize that the Moon is the best calibration target for satellite instruments because of its unparalleled stability. The lunar surface reflectance is considered invariant at less than a part in 10^8 per year. Once the lunar metrology is established, it will contribute greatly to the calibration consistency across satellites from different nations and agencies. This will greatly improve the current lunar calibration at NASA, USGS, and NOAA. It will also enable a number of novel night time applications from the VIIRS day-night-band.

In this seminar, Dr. Brown will introduce a NIST initiative to establish lunar metrology. He believes that an Absolute Calibration of the Moon at the 1% level would answer the questions about the uncertainties in the calibration transfer-to-orbit as well as sensor trending with non-optimal, changing geometrical conditions (the case for both MODIS and VIIRS) for earth measurements. The resultant uncertainty of 1.8% would meet the uncertainty requirements for many climate data products.

Dr. Brown has been pioneering advanced radiometric artifacts to improve the characterization and calibration of optical sources used in climate change research, absolute stellar radiometry, and medical imaging. He is an expert on the Spectral Irradiance and Radiance Responsivity Calibrations using Uniform Sources (SIRCUS), which is a state-of-the-art radiometry system at NIST that has been used extensively for satellite instrument characterization.

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