

Joint Condensed Matter  
and  
Center for Soft Matter and Biological Physics  
Seminar

**Dr. Michael Cooney**

**NASA Langley Research Center**

**Engineering Work at NASA Langley Electronic Systems Branch**

Monday, February 19, 2018

4:00pm – 5:00pm

304 Robeson Hall

Dr. Michael Cooney will discuss three projects he currently supports. The first is a space flight project, the Mars Entry Descent and Landing Instrumentation 2 (MEDLI2). MEDLI2 will extend and enhance the dataset from the MEDLI mission, which flew on the Mars Science Laboratory (MSL) in 2012 and was the first instrument to characterize Mars' aero-thermal environment. MEDLI2 is scheduled to fly on the MARS 2020 mission. The second project is ARCSTONE, a lunar spectral reflectance instrument in response to the 2007 and 2017 Earth Science Decadal Surveys. Instrument intercalibration is a vital tool to maintain consistent datasets across various instruments and ensure historical continuity. The Moon is considered to be an excellent exo-atmospheric calibration source, however the accuracy of the Moon as an absolute reference is limited to 5-10%. An orbiting spectrometer flying on a small satellite in low Earth orbit will provide lunar spectral reflectance with accuracy sufficient to establish an SI-traceable absolute lunar calibration standard for past, current, and future Earth weather and climate sensors. The final project is a research activity in partnership with Virginia Tech to develop broadband photodetectors for measuring radiative flux in response to the Earth Science Decadal survey. Existing Earth science radiation budget instruments rely on radiometers with relatively difficult custom manufacturing processes and slow readout speed. To provide a lower cost future mission options, photon based photosensors have the possibility to lower mission cost while enabling new mission architectures.