Time & Location: April 7, 2015 at 12:00 PM in HEC 450
Title: AN ON-ORBIT CALIBRATION PLAN FOR SPACEBORNE MICROWAVE RADIOMETERS USING SPECIAL SPACECRAFT ATTITUDE MANEUVERS

Spaceborne microwave radiometers have been in use since the 1960’s providing geoscientists invaluable insight into the complex interaction of the atmosphere, ocean and land in the climate of our planet. Such key instruments must be vented of any calibration issues so to provide the utmost accurate & stabilized dataset for scientific analysis. There are many post-launch calibration methods currently in use but most require multiple ancillary data sets and a lengthy duration of on-orbit data of the instrument to come to conclusive results. One on-orbit calibration method that can provide accurate & early results is the Calibration Attitude Maneuver (CAM). CAMs which encompasses Deep Space Calibration (DSC) & a new use of the Second Stokes (SS) analysis can provide early & much needed insight on the performance of the instrument. This dissertation describes pre-existing & new methods of using DSC maneuver as well as a simplified use of the SS. The Tropical Rainfall Measuring Mission (TRMM) spacecraft has performed multiple CAMs over its lifetime and is what is used to implement the previous mentioned methods. In addition to developing these methods this research focuses on the calibration of TMI so to be incorporated in the final processing of the NASA TMI brightness temperature data product.

Major: Electrical Engineering

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Approved for distribution by W.Linwood Jones, Committee Chair, on April 7, 2015.

The public is welcome to attend.