Announcing the Final Examination of Zoubair Ghazi for the degree of Doctor of Philosophy

Time & Location: October 24, 2014 at 11:00 AM in HEC 450
Title: CONAE MICROWAVE RADIOMETER (MWR) COUNTS TO BRIGHTNESS TEMPERATURE ALGORITHM

This dissertation focuses on development of the MicroWave Radiometer (MWR) brightness temperature (Tb) algorithm and the on-orbit validation using on-orbit MWR Tb measurements. This research is sponsored by the NASA Earth Sciences Aquarius Mission, a joint international science mission, between NASA and the Argentine Space Agency (Comision Nacional de Actividades Espaciales, CONAE).

The MWR is a CONAE developed passive microwave instrument operating at 23.8 GHz (K-band) H-pol and 36.5 GHz (Ka-band) H- & V-pol to complement Aquarius L-band radiometer/scatterometer which is the prime sensor. MWR measures brightness temperature Tb and provides simultaneous spatially collocated environmental measurements (such as surface wind speed, rain rate, water vapor, and sea ice) to derive an accurate sea surface salinity (SSS).

This research addressed several areas including development of: 1) a signal processing procedure for determining and correcting radiometer system non-linearity; 2) an empirical method to retrieve switch matrix loss coefficients during thermal-vacuum radiometric calibration test; and 3) an antenna pattern correction (APC) algorithm using Inter-satellite radiometric cross-calibration of MWR with the WindSat satellite radiometer. The validation of the MWR counts-to-Tb algorithm was performed using two years of on-orbit data, which included special deep space calibration measurements and routine clear sky ocean/land measurements.

Major: Electrical Engineering

Educational Career:
Bachelor’s of Aircraft Electrical and Flight Navigation Complexes Maintenance, BS, 1999, Kiev International University of Civil Aviation
Master’s of Electrical Engineering, MS, 2011, University of Central Florida

Committee in Charge:
W. Linwood Jones, Chair, EE
Piepmeier, Jeffrey R, NASA
Mikhael Wasfi, UCF Electrical Engineering department
Lei Wei, UCF Electrical Engineering department
Thomas Wu, UCF Electrical Engineering department
William Junek, US Air Force

Approved for distribution by W. Linwood Jones, Committee Chair, on August 2, 2014.

The public is welcome to attend.