BOSTON UNIVERSITY

ASTROPHYSICS SEMINAR SERIES

"The Star Formation in Radio Survey: GBT Findings and Initial Results with the Jansky VLA"

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Monday, March 4, 2013
Refreshments at 3:30pm in CAS 500
Talk begins at 4:00pm in CAS 502

Abstract:
High frequency (~10-100 GHz) radio emission from galaxies offers one of the best means to quantify current star formation activity. At these frequencies, emission is generally optically thin and dominated by free-free radiation, which is directly proportional to the ionizing photon rate of young, massive stars. However, up to now, the faintness of emission at these frequencies has limited such observations to Galactic HII regions and the brightest galaxy nuclei. In this talk I will describe the Star Formation in Radio (SFR) survey, which is targeting a physically diverse sample of >100 galaxy nuclei and extranuclear star-forming regions using the new wide-band capabilities of the GBT, Jansky VLA, and ALMA. Each region has been spectroscopically mapped by Spitzer and Herschel Key projects. Recent GBT results on the Ka-band (26-40~GHz) emission properties for 10 star-forming regions in the nearby galaxy NGC~6946 will be highlighted, including the first detection of anomalous microwave emission outside of the Galaxy. I will additional present the findings from the full GBT survey, along with initial VLA imaging of NGC~6946, NGC~1482, and NGC~1266. In light of these results, I will briefly mention the utility of the rest-frame Ka-band for quantifying star formation activity at high-redshift with next-generation radio facilities.