

## **SESSION: SWARM, ePOP**

Thu, Feb 21, 13:30-13:45

### **Spectral and Polarization Characteristics of Unexpected Stimulated Natural Radio Emissions as Observed by ePOP-RRI during an Arecibo Heating Campaign**

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In this work, we present the spectral and polarization characteristics of an unexpected signal observed by the Radio Receiver Instrument (RRI) on the Enhanced Polar Outflow Probe (ePOP), which is on the CASSIOPE spacecraft. RRI consists of crossed orthogonal dipole antennas, which operate as a polarimeter. In this mode, RRI observed some unexpected radio emissions.

This unexpected signal was first observed during the July 2017 Arecibo HF heating campaign. It increased in frequency with increasing altitude and was aligned perpendicular to the geomagnetic field.

A similar experiment was conducted during November 2018 Arecibo HF heating campaign, but this time specifically to reproduce the unexpected stimulated natural radio emissions, and there were more supporting observations. However, the increase in frequency with increasing altitude was not observed. But as in 2017 observations, the signal was generated perpendicular to the geomagnetic field.

The physical generation mechanism has not yet been definitively identified, but we suggest that these are narrowband stimulated electromagnetic emissions (NSEE) generated by the artificial field-aligned irregularities (FAIs) which are sourced from HF heating.