

2022—2023 ASTROPHYSICS SEMINAR SERIES

**Science and Opportunity with the VLA Low-band Ionosphere
and Transient Experiment**

The U.S. Naval Research Laboratory built and operates the VLA Low-band Ionosphere and Transient Experiment (VLITE), which is a commensal instrument on NRAO's Karl G. Jansky Very Large Array (VLA). VLITE records data at a central frequency of 340 MHz during nearly all routine VLA observations. In addition to the standard observing mode, a special mode for VLITE was implemented which allows it to record data during the 3GHz VLA Sky Survey (VLASS) observations, to generate a VLITE Commensal Sky Survey (VCSS). VLITE has been operational for nearly 8 years with a current total of 18 antennas and has processed 47,000 hours of VLA time, producing 0.5 million images, and cataloging more than 20 million sources.

I will present an overview of the VLITE instrument, data processing pipelines and the scientific data products. Reduction of VLITE data (including in particular the sky survey) was complicated by the need for an accurate model for the asymmetric 2-dimensional primary beam response. We solved this issue by using archival data built up during the first few years of full science operations. During the past year since generating the beam model, we have transitioned to focus on exploring the VLITE and VCSS data for a range of science programs. I will highlight some of the science VLITE has enabled from transient searches, discovery of a new millisecond pulsar, to studies of AGN spectra and AGN lifecycles in galaxy clusters.

**Tuesday, October 11th**

3:30 - 4:30 p.m.

Available only on zoom

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