

## Detecting the Highest Energy Neutrinos with a Radio Phased Array

Ultra-high energy neutrino astronomy sits at the boundary between particle physics and astrophysics. Through neutrino astrophysics, we can probe the nature of the ultra-high energy universe in a unique way and test our understanding of particle physics at energies much greater than those achievable at particle colliders. The best limit to date on the flux of ultra-high energy neutrinos comes from the ANITA experiment, a balloon-borne radio telescope designed to detect coherent radio Cherenkov emission from cosmogenic ultra-high energy neutrinos. The third flight of the ANITA experiment launched on December 18, 2014 and flew for 22 days, collecting the world's most sensitive data set at the highest energies. The future of high energy neutrino detection lies with ground-based radio arrays, which would represent an enormous leap in sensitivity and be able to push the energy threshold for radio detection down to overlap with the energy range probed by IceCube. I will discuss the development of an interferometric phased array for detection of high energy neutrinos. We have deployed a prototype detector at Summit Station in Greenland, and the full array would have the sensitivity to discover the highest energy neutrinos even in the most pessimistic of models and will study the high energy cutoff of the astrophysical neutrino flux detected by IceCube.