

# Radio-Frequency Propagation Modes in Antarctic Ice: Implications for UHE-nu Detection

## Abstract content

Ultra-High Energy (UHE) neutrino ( $\nu$ ) detection via the Askaryan effect in Antarctic ice is a long-time goal of the field of astro-particle physics. The Askaryan effect occurs when a UHE cascade radiates electromagnetic waves. For UHE- $\nu$  interactions, the Askaryan signal is expected to be in the radio-frequency (RF) bandwidth, and Antarctic ice is a suitable detection medium for such signals. Refining the designs of current Antarctic Askaryan-based UHE- $\nu$  detectors requires a detailed understanding of various RF propagation modes in Antarctic ice. Previously unpublished data taken from Moore's Bay, Antarctic will be presented, along with a model that explains the observed RF propagation phenomena. Finally, there will be a discussion for the implications for UHE- $\nu$  detector designs.

**Primary author(s) :** Dr. HANSON, Jordan (Whittier College)

**Presenter(s) :** Dr. HANSON, Jordan (Whittier College)

**Session Classification :** Neutrino Astronomy

**Track Classification :** Neutrinos