

Abstract Submitted
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Point-to-point measurement of radio frequency attenuation in South Polar ice MICHAEL RICHMAN, KARA HOFFMAN, University of Maryland — For ultra high energy (UHE) electromagnetic showers in a dense medium, radio frequency Cherenkov emission is enhanced due to the Askaryan effect. Present and future detectors such as RICE, ANITA, ARIANNA and the Askaryan Radio Array (ARA) exploit this effect to detect UHE neutrinos interacting with Antarctic ice. The radio frequency electromagnetic wave attenuation length (the distance over which signal amplitude diminishes by a factor of $1/e$ due to absorption or scattering) is of tantamount importance as it determines the size scale and effective volume of these detectors. Previous attenuation measurements rely on reflections off the bedrock of signals from a surface-mounted transmitter. Using RICE in-ice transmitters and IceCube Radio Extension in-ice receivers, we are conducting a point-to-point attenuation measurement in the upper 1500 meters of South Polar ice, the region of interest for planned near-surface detectors such as ARA. We will present the analysis method as well as preliminary results.

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