

Abstract Submitted  
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**Modeling RF Emissions from Particle Showers in Dense Mediums**<sup>1</sup> RACHEL HYNEMAN, William & Mary Coll, KONSTANTIN BELOV, STEPHANIE WISSEL, University of California, Los Angeles, T-510 EXPERIMENT TEAM — The Antarctic Impulsive Transient Antenna (ANITA) experiment has recorded multiple Ultra High Energy Cosmic Ray (UHECR) events via radio-frequency emissions from secondary particle showers in the Earth's atmosphere. The energy of these UHECR particles is reconstructed using Monte Carlo simulations based on first principles. The goal of the SLAC T-510 experiment is to validate these simulations and to provide an energy calibration for ANITA data analysis. We incorporated an RF emission simulation based on ZHS code into the GEANT4 toolkit, used for modeling the passage of particles in accelerator experiments. We predict strong radio emissions at the Cherenkov angle from a cascade of secondary particles in a polyethylene target in moderate magnetic fields. We see a strong dependence of the horizontally polarized component of the electric field on top of the Cherenkov cone on the magnetic field strength. We also observe a skewing of the Cherenkov cone as the magnetic field increases, which we believe to be an indication of the Askaryan effect.

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