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Radio Emission from an Electron Shower in a Dielectric in the Presence of a Magnetic Field STEPHANIE WISSEL, KONSTANTIN BELOV, University of California, Los Angeles, T-510 EXPERIMENT COLLABORATION — Several new experiments employ the radio technique to detect ultra-high-energy cosmic rays. The dominant component of the radio-frequency radiation arises from synchrotron emission due to the interaction of the cosmic ray's air shower particles with the Earth's magnetic field. Secondary, but non-negligible, radiation arises from the build up of a charge asymmetry in the shower. We present measurements from the SLAC T-510 experiment in which we bombard a polyethylene target (n=1.5) in a magnetic field (up to a few kiloGauss) with a few GeV electron beam. Antennas in bands ranging between 30-300 MHz and 300-1200 MHz map out the radio emission in bands relevant for ground arrays and balloon-borne experiments such as ANITA. The data presented here serve to calibrate models of radio emission, ZHAires and CoREAS, by providing a suite of controlled, accelerator-based measurements.

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