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### **First Results from the ANITA Experiment<sup>1</sup>**

PETER GORHAM, University of Hawaii at Manoa

We present initial results of the 18 day long-duration balloon flight of the Antarctic Impulsive Transient Antenna (ANITA) prototype payload, dubbed ANITA-lite. The goal of the ANITA experiment is to detect cosmogenic ultra-high energy neutrinos, the so-called “guaranteed” flux arising from the integrated interactions of EeV-to-ZeV cosmic rays throughout the universe. ANITA exploits the power of coherent radio Čerenkov radiation emitted from the Askaryan excess charge in a high energy cascade. The exceptional radio-frequency (RF) transparency of Antarctic ice enables an antenna array on a balloon payload to monitor more than a million cubic kilometers of ice, giving unprecedented sensitivity to neutrino interactions in the EeV energy regime. ANITA-lite flew in early 2004 with a pair of prototype dual-polarization ANITA antennas, sensitive over the 0.2-1 GHz band, and able to trigger on impulsive events such as those expected from coherent RF cascade emission. ANITA-lite has demonstrated that RF backgrounds and electromagnetic interference for an Antarctic balloon payload are extremely low, and has verified the interferometric timing capabilities of the system, which are essential to event reconstruction and neutrino direction estimation. Limits on cosmogenic neutrino fluxes from analysis of the ANITA-lite data are presented, along with constraints on large extra dimensions and ultra-high energy neutralino fluxes.

<sup>1</sup>For the ANITA collaboration