

Abstract Submitted
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Using ANITA to Measure Ultra High Energy Neutrino-Nucleon Cross Section FENFANG WU, UCI, ANITA COLLABORATION — The balloon-borne ANtarctica Impulsive Transient Antenna (ANITA) was successfully launched on December 15th, 2006 and remained in the air for about 35 days. It was designed to detect ultra high energy (greater than 3 EeV) neutrinos by detecting the Askaryan pulses from the neutrino-nucleon interactions in the ice. The usual detection scenario involves nearly horizontal neutrinos interacting in the bulk ice of the Antarctic ice sheet to produce detectable radio signatures. There is an alternative detection channel from the interactions within the coastal ice shelves. Recent studies of the Ross Ice Shelf confirm earlier work that indicated that most of the ice-water boundary beneath the shelf behaves like a very good mirror at radio frequencies. This property and the relatively long field attenuation length create the opportunity to observe reflected radio pulses from the bottom. The interaction rate from the relatively thin ice shelves is more sensitive to the neutrino cross-section than the rate from the bulk ice. With sufficient statistics, the cross-section can be measured by comparing the rate of neutrino interactions in the ice sheet to the ice shelf. The method and its advantages and limitations will be presented.

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