Abstract Submitted
for the APR14 Meeting of
The American Physical Society

Greenland Neutrino Observatory (GNO): A New Detector for Ultra-high Energy Neutrinos ABIGAIL VIEREGG, University of Chicago, GREENLAND NEUTRINO OBSERVATORY (GNO) COLLABORATION — Neutrinos travel virtually unimpeded through the universe, making them unique messenger particles for cosmic sources and carrying information about very distant sources that would otherwise be unavailable. The observation of ultra-high energy (UHE) neutrinos ($E > 10^{18}$eV) would also allow a measurement of weak interaction couplings at center of mass energies well beyond that of the LHC and reveal the origin of the highest energy cosmic rays. We are planning to deploy a new array of radio detectors for UHE neutrinos near the surface of the ice at Summit Station in Greenland, a year-round NSF station that sits atop 3 km of ice at the height of the Greenland plateau. The full array will have the sensitivity required to discover neutrinos produced through the so-called GZK process (the interaction of the highest energy cosmic rays with cosmic microwave background photons) even in the most pessimistic of models and will detect ~ 10 events per year at the high-energy portion ($E > 10^{15}$eV) of the observed IceCube astrophysical neutrino spectrum with sub-degree pointing resolution. We are planning to deploy our first module in the summer of 2014.

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Date submitted: 06 Jan 2014 Electronic form version 1.4