

CU Physics Department Particle Seminar

Wednesday, September 24, 2008 705 Pupin Hall 1:00 PM



The ANITA telescope:

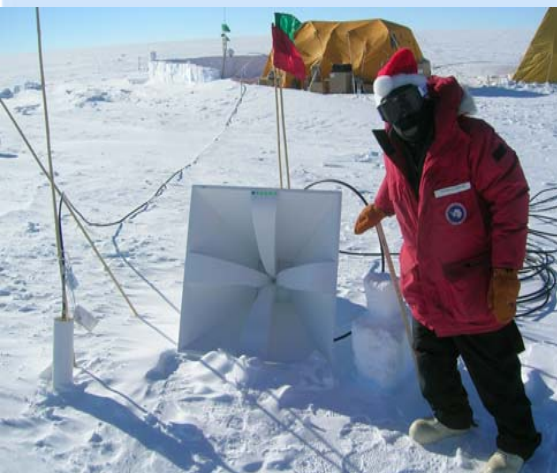


A one million square kilometer objective lens for high energy neutrinos

David Saltzberg

The Antarctic Impulsive Transient Antenna (ANITA) is a long-duration balloon payload built to detect >3 EeV cosmic neutrinos. Such neutrinos may reveal the true nature of the most powerful astrophysical accelerators, and would allow us to probe the weak interaction at 150 TeV, an order of magnitude higher C.M. energy than at terrestrial machines.

A near-certain source of these neutrinos is provided by the GZK effect, in which the highest energy cosmic rays produce pions by scattering on the 3K cosmic microwave background. The ANITA instrument uses the Askaryan effect to detect neutrinos interacting in the Antarctic ice, which produce radio-cherenkov radiation. Data from our first full flight on a NASA long-duration balloon at 120,000 feet will be shown. I will also describe the improved instrument we built to fly this upcoming December. Ideas for achieving the next order of magnitude in sensitivity will be discussed.



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