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Progress in the Development of Radio-Cherenkov Neutrino Detectors

Friday, July 31, 2015 5:00 PM (30 minutes)

Evidence is growing for the existence of a diffuse flux of astrophysical neutrinos with energies up to a few x 10^15 eV. This has spurred considerable interest in developing new techniques that can extend the search to even higher neutrino energies. Promising new efforts over the past half-decade focus on the radio-Cherenkov technique in polar regions with cold, highly transparent ice. I will describe the broad, complementary physics goals of these telescopes with design sensitivities as least a factor 10 better than current limits for energies >10^17.5 eV. One important goal centers on a measurement of the cosmological neutrino flux, whose existence is relatively secure but also expected to be quite small even under the best of circumstances. The inherent cost efficiencies of radio-Cherenkov techniques suggest far greater boosts in sensitivity are possible. After briefly reviewing the progress by ANITA, ARA, and GNO collaborations, I will report on the first results from the ARIANNA Hexagonal Radio Array, completed in December 2014 and located on surface of the Ross Ice Shelf at a site about 110 km from McMurdo Station, Antarctica.

Collaboration

– not specified –

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