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The ExaVolt Antenna Mission Concept and Technology Developments

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In the past decade, searches for the cosmogenic neutrino flux produced by the interactions of ultra-high energy cosmic rays with the cosmic microwave background have not yet resulted in detection. Radio detection of ultra-high energy neutrinos provides a cost-effective means probing large amounts of effective volume. The Antarctic Impulsive Transient Antenna (ANITA) balloon-borne experiment, with sensitivity to neutrinos with energies $> 10^{19}$ eV, has provided some of the most stringent limits on cosmogenic neutrino production models by searching for coherent radio Cherenkov signals produced by the Askaryan effect in Antarctic ice. The ExaVolt Antenna (EVA) is a mission concept to extend the sensitivity of balloon-borne radio neutrino detection to energies 10^{17} eV. EVA uses a novel antenna design that exploits the surface area of the balloon to provide a reflector antenna with 30 dBi gain (compared to 10 dBi on ANITA). We will present an overview of the mission concept and recent technology developments.

Collaboration

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