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The ExaVolt Antenna: Concept and Development Updates

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A flux of ultrahigh energy neutrinos is expected both directly from sources and from interactions between ultrahigh energy cosmic rays and the cosmic microwave background. Using the cost-effective radio Cherenkov technique to search for these neutrinos, the ExaVolt Antenna (EVA) is a mission concept that aims to build on the capabilities of earlier radio-based balloon-borne neutrino detectors and increase the sensitivity to lower energies and fluxes. The novel EVA design exploits the surface of the balloon to provide a focusing reflector that aims to provide a signal gain of ˜30 dBi (compared to 10 dBi on ANITA). This increase in gain when combined with a large instantaneous viewing angle will yield a 10-fold increase in sensitivity and will allow this balloon-borne experiment to probe the expected low neutrino fluxes even at energies greater than 10^{19} eV. This contribution will present an overview of the mission concept, recent technology developments, and the results of a hang test of a 1:20-scale model which demonstrates the effectiveness of the design.

Summary

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