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Constraints on the ultra-high-energy cosmic neutrino flux from the fourth flight of ANITA

The ANtarctic Impulsive Transient Antenna (ANITA), a NASA long-duration balloon payload completed its fourth flight in December 2016 with 28 days of flight time. We present the results of two separate blind analyses searching for Askaryan radio emission in the polar ice from ultra-high-energy neutrino interactions. The more sensitive analysis, with a better expected limit, had a background estimate of $0.6^{+0.69}_{-0.45}$ and an analysis efficiency of $82 \pm 2\%$. Each analysis found one event in the signal region, consistent with
the background estimate. Combining the limit from the more sensitive of these analyses with previous ANITA limits, we place the strongest constraints on the ultra-high-energy diffuse neutrino flux at energies between $10^{19.5}$ eV and 10^{23} eV.

Mini-abstract

ANITA sets the tightest constraint on the ultra-high-energy neutrino flux above $10^{19.5}$ eV.

Experiment/Collaboration

ANtarctic Impulsive Transient Antenna

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