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Searching for Ultra-High Energy Neutrinos with ANITA

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ANITA (the ANtarctic Impulsive Transient Antenna) is a long-duration balloon borne radio interferometer designed to search for ultra-high energy (> 10^18 eV) cosmogenic neutrinos.
Over a few weeks it flies at an altitude of 37km, scanning the Antarctic ice for Askaryan radio emission created by neutrino interactions.
To date four science flights have been completed, with a fifth flight proposed for the near future.
In this talk I give an overview of ANITA with a focus on the third and fourth flights and discuss the recently completed analyses of ANITA-3 data.

The most sensitive neutrino search from ANITA-3 found a single neutrino candidate event on an expected background of 0.7 (+0.8 -0.3) events.
The analysis set the best limit on the diffuse flux of ultra-high energy neutrinos at energies above 10^19.5 eV.
Although consistent with the initial background estimate, interpretation of the surviving event as a neutrino is still plausible after additional post-unblinding scrutiny.

The ANITA-3 analyses also found nearly 30 extensive air shower events in an alternative polarization to the neutrino search.
All but one of these events are identified as ultra-high energy cosmic rays.
We give a speculative interpretation of the remaining alternative polarization event.

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