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Observation of UHE Cosmic Rays from a Balloon-borne Radio Interferometer

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The ANtarctic Impulsive Transient Antenna (ANITA) is a balloon-borne antenna array designed to detect coherent radio Cherenkov radiation from ultra-high energy (UHE) neutrino-induced particle showers in the Antarctic ice sheet. The data of the first flight (2006-2007) have been re-analyzed using more sensitive radio-interferometric mapping technique. This approach has produced a statistically significant set of 16 cosmic ray events. I will present an overview of the analysis techniques along with the first ultra-wideband, far-field measurements of the radio spectral density of geosynchrotron emission in the range from 300-1000 MHz.

Auteur principal: M. ROMERO-WOLF, Andres (University of Hawaii)

Orateur: M. ROMERO-WOLF, Andres (University of Hawaii)

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