

Abstract Submitted  
for the TSF16 Meeting of  
The American Physical Society

**Ionospheric neutron content analyzer** JUAN TRETO, student — The Ionospheric Neutron Content Analyzer (INCA) is a 3U CubeSat being built by New Mexico State University students. INCA will study the latitude and time dependencies of the neutron spectrum in low earth orbit (LEO) for the first time. INCA will carry a directional neutron detector, developed by NASA's Goddard Space Flight Center and the University of New Hampshire. INCA's focus are albedo neutrons and solar neutrons. Albedo neutrons are produced by high energy particles interacting with the Earth's ionosphere, and can cause single-event upsets in electronics. Albedo neutrons decay, within 15 minutes, into protons and electrons, which are then trapped in the Earth's magnetic field. Cosmic rays, solar flares, and coronal mass ejections all contribute to albedo neutron formation. INCA will also chart solar neutron flux relative to solar activity. This will let us extrapolate information about their subsequent air shower effects in Earth's atmosphere. Direct solar neutrons are a component of solar wind, which allows us to learn about how and where they are accelerated. The data gathered by a directional instrument on a low-mass platform will provide data that can significantly improve our understanding of space weather and the formation of Earth's radiation belts.

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Date submitted: 25 Sep 2016

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