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## Measuring the Sun's Soft X-ray Spectrum from a Sounding Rocket

by

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### ABSTRACT

We report on the results of a sounding rocket experiment flown on October 15, 2004 from White Sands New Mexico. The primary goal of the rocket experiment was to determine the full-disk spectrum of the Sun at X-ray through ultraviolet wavelengths. At soft X-ray wavelengths, the magnitude and variability of the Sun's spectrum is poorly understood owing to numerous observational difficulties. This spectral region is very important however as it provides a significant and highly variable source of ionization to the D and E regions of the ionosphere.

One of the instruments on the rocket experiment is the Avalanche-photodiode X-ray Spectrometer (AXS). The purpose of AXS is to measure the solar spectrum between 0.1 and 3.5 nm. AXS uses an avalanche photodiode in a photon counting mode. State-of-the-art electronics developed at GI are used to isolate each event and determine the wavelength of each photon. In this manner a spectrum is obtained without the use of any optics. This instrument is the first of its kind and was highly successful on its first flight. The development of AXS is a significant achievement for the GI electronics group and brings extensive new capability to them.

In this talk we will describe the science behind AXS, the development of the instrument, and the recent first flight. We will also provide a preliminary description of the first results. In order to celebrate the success of AXS and of the rocket flight, refreshments will be provided!

Friday, Nov. 12, 2004  
Globe Room, Elvey Bldg  
3:45 pm