

**ULYSSES COSPIN OBSERVATIONS OF THE ENERGY AND CHARGE
DEPENDENCE OF THE PROPAGATION OF SOLAR ENERGETIC
PARTICLES TO THE SUN'S SOUTH POLAR REGIONS***

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A surprising feature of recent observations by Ulysses over the Sun's south polar regions has been the frequent observation of solar energetic particles produced by events originating even in the northern hemisphere. In many cases no direct magnetic connection would be expected with either the origination site of the event on the Sun or with the expanding CME and shock front in the solar wind, where presumably most of the particles are accelerated. Nevertheless, the fluxes often reached levels comparable to those observed near Earth in the ecliptic, especially during the decay phase. The Cosmic and Solar Particle Investigation (COSPIN) on Ulysses provides an extensive range of measurements of fluxes and anisotropies of energetic protons and electrons, extending from < 1 MeV through several GeV for protons, and from ~ 1 to >100 MeV for electrons. Using the full suite of observations available from the COSPIN experiments we will investigate the arrival of solar energetic particles at high latitudes. We will attempt to determine the energy and charge dependence of the propagation process and the relative importance for propagation to the polar regions of cross-field diffusion vs. propagation along interplanetary magnetic field lines that may make significant excursions in latitude.

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