

**INTENSITIES OF GALACTIC COSMIC RAY NUCLEI FROM THE  
ECLIPTIC TO THE SOUTH SOLAR POLAR REGIONS NEAR SOLAR  
MAXIMUM: OBSERVATIONS FROM THE ULYSSES COSPIN HIGH  
ENERGY TELESCOPE\***

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Ulysses passed through its maximum south heliographic latitude of  $80.2^\circ$  S in late November 2000, near the maximum in the solar activity cycle. It is now embarked on a fast latitude scan that will bring it to a perihelion at 1.34 AU near the solar equator in mid-May 2001, and to its maximum northern latitude in mid-October 2001. Since its aphelion in late 1997 at  $\sim 5.4$  AU near the ecliptic, Ulysses has been climbing in latitude towards the south polar regions during a period of increasing solar activity, and the most recent observations show that the sign of the solar magnetic dipole has reversed, as expected near solar maximum. For models of the solar modulation of galactic cosmic rays which include drifts, this reversal leads to an expected reversal in the sign of latitudinal gradients from positive to negative. Throughout the period of increasing activity the levels and time variations of modulation observed at Ulysses and at IMP-8 near Earth have been closely similar despite the significant radial and latitudinal separations between the spacecraft. Thus latitudinal and radial gradients have remained small during the approach to maximum solar activity. A surprise is that at some energies, especially for protons with energies  $\sim 35$ -70 MeV, the latitudinal gradients appear to have reversed even before the reversal of the solar magnetic dipole was complete. Observations from the fast latitude scan will be crucial to confirmation of this reversal in sign of the gradients. We will present observations through the South Polar pass and as far into the fast latitude scan as possible to define the radial and latitudinal gradients for cosmic ray nuclei in the inner heliosphere near solar maximum

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