



Charge sign dependent latitudinal gradients of galactic cosmic

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We study the spatial gradients of galactic cosmic ray protons and electrons in the inner heliosphere using data from the Kiel Electron Telescope (KET) aboard Ulysses and the Cosmic Ray Isotope Spectrometer (CRIS) aboard the Advanced Composition Explorer (ACE) for the time period from 1997 to 2008. This covers the solar minimum in the A>0-solar magnetic epoch, the solar magnetic reversal to an A<0-magnetic epoch at solar maximum and the declining phase of solar cycle 23. In order to calculate the galactic cosmic ray intensity distribution in the inner heliosphere we used the 125-250 MeV/nuc helium channel from KET and a combination of carbon channels from the CRIS instrument on ACE. Our analysis results in a radial and latitudinal intensity gradient of $G_r = 4.7 \pm 0.6\%/AU$ and $G_\theta = -0.02 \pm 0.03\%/degree$ for 1.2 GV helium, respectively. If we assume that the temporal variation and the radial gradient is the same for protons and electrons during the fast latitude scan of Ulysses in 2007, we obtain the first ever measurement of a positive latitudinal gradient for 2.5 GV electrons of about 0.2%/degree.