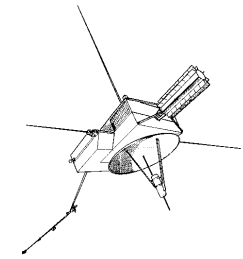




Ulysses Measures Consistent Ages for Cosmic Rays Using Four Radioactive Clocks.



The average age of the cosmic rays can be measured using radioactive nuclei with long half lives that are produced as secondaries by fragmentation of the primary cosmic ray nuclei during their propagation through the Galaxy. The University of Chicago's COSPIN High Energy Telescope on Ulysses has determined the cosmic ray age using four radioactive secondaries from different regions of the periodic table, having different half-lives, energies, and production cross sections. All the measurements are consistent with an age in the range 16 – 22 million years, and with an average interstellar density along the propagation path of about 0.25 atoms/cc, well below the average interstellar density of ~ 1 atom/cc. This provides evidence for a low density Galactic halo in which the cosmic rays can be confined for millions of years.

