



Cosmic rays flux and geomagnetic field variations at midlatitudes

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It is well known that the cosmic rays flux is modulated by the solar wind and the Earth's magnetic field. The Earth's magnetic field deflects charged particles in accordance with their momentum and the local field strength and direction. The geomagnetic cutoffs depend both on the internal and the external components of the geomagnetic field, therefore reflecting the geodynamo and the solar activity variations.

A new generation, high performance, cosmic ray detector Tragaldabas was recently installed at the University of Santiago de Compostela (Spain). The detector has been acquiring test data since September 2013 with a rate of about 80 events/s over a solid angle of ~ 5 sr. around the vertical direction. To take full advantage of this new facility for the study of cosmic rays arriving to the Earth, an international collaboration has been organized, of about 20 researchers from 10 laboratories of 5 European countries.

The Magnetic Observatory of Coimbra (Portugal) has been measuring the geomagnetic field components for almost 150 years since the first measurements in 1866. It is presently equipped with up-to-date instruments. Here we present a preliminary analysis of the global cosmic ray fluxes acquired by the new Tragaldabas detector in relation to the geomagnetic field variations measured by the Coimbra observatory. We also compare the data from the new cosmic rays detector with results obtained by the Castilla-La Mancha Neutron Monitor (CaLMA, Gadalajara, Spain) that is in operation since October 2011.