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Study of Forbush decreases during Solar Cycle 25 with the ALPAQUITA array

Solar cycle 25 is reaching its period of maximum activity. Associated to this, gigantic coronal mass ejection sweep cosmic rays in the Interplanetary medium, producing a sudden decrease in the cosmic-ray intensity is observed at Earth (and in space). These so called Forbush decreases (FD) can be detected on the surface of Earth at various geomagnetic cut-off rigidities using Neutron Monitors and muon telescopes. The ALPAQUITA detector located in Bolivia has been in operation since April 2023 and is capable of detecting high rigidity FDs, using coincidences of any 1 and any 2 scintillators. In this presentation we show the results obtained with ALPAQUITA in the time period between 2023-2024, including the important event of May 2024, comparing our results with neutron monitors and muon detectors around world to study the rigidity dependence of these events. With this we show our technique provides a novel approach to study FDs at the highest rigidities.

Collaboration(s)

The ALPACA collaboration

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