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Observation and analysis of the anisotropic Forbush decrease of 24 March 2024

It is known that GCR flux exhibits notable transient suppressions due to coronal mass ejections (CMEs) and co-rotating interaction regions (CIRs) in the solar wind, called Forbush decreases (FDs). FDs are observed as fast, occasionally two-step, decreases in the count rate of particle counters, which can reach 25 –30%. The decrease is usually followed by a gradual recovery taking up to several days or even a week. Strong FDs are often accompanied by major magnetospheric storms. A particularly strong FD, observed as suppression of the flux of galactic cosmic rays was observed by the global network of ground-based neutron monitors (NMs) on 24–25 March 2024. The decrease revealed an unusual rapid recovery leading to false ground-level enhancement alarm from the cosmic radiation warning systems. The event was highly anisotropic, with anisotropy focused nearly on the anti-sunward direction. Here we present the observations, focusing on NM records, and the corresponding analysis.

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