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Poster
In addition to solar modulation according to the ~11-year sunspot cycle and the ~22-year solar magnetic cycle, the time profile of the Galactic cosmic ray flux can also exhibit short-term (~2-week) modulation events. These are distinct from Forbush decreases in that they are more symmetric in time and evolve over a time scale much longer than the transit of an interplanetary shock and/or coronal mass ejection (CME). Using data from the Princess Sirindhorn Neutron Monitor at the summit of Doi Inthanon, Thailand, with the world's highest effective vertical geomagnetic cutoff rigidity for a fixed station (16.7 GV), we have examined the solar diurnal anisotropy and find that it exhibited strong peaks during two short-term modulation events in 2012, which were indeed stronger than the diurnal anisotropy variation from sunspot minimum to maximum. We attribute these short-term modulation events to non-local effects of CME shocks (possibly single, multiple, or merged) that propagate beyond Earth and inhibit the access of cosmic rays for ~2 weeks. The direction of anisotropy enhancement favors an explanation in terms of cosmic ray diffusion perpendicular to the interplanetary magnetic field, which eventually causes the cosmic ray flux to stop decreasing and gradually recover. Partially supported by grant RTA6280002 from Thailand Science Research and Innovation.
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