## Interplanetary Transient Flows, Associated Forbush Events And Ground Level Enhancements SUBHASH C. KAUSHIK\*

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This talk presents the behavior of transient cosmic rays Forbush decrease events during the phase of highly geoeffective interplanetary transient solar wind plasma flows. The Ground Level Enhancements (GLE's) are the sudden and sharp increase in the cosmic ray intensity, which is expected to occur due to solar transient eruptions. These interplanetary transients are large scale structures containing plasma and magnetic field expelled from the active regions of solar atmosphere. We have studied the Bi-directional Electron Heat Flux (BEHF) Events. These are the fast magnetized plasmoids moving away from the Sun in to interplanetary space. As they come to interplanetary medium the interplanetary magnetic field drape around them. This field line draping was thought as possible cause of the characteristic eastward deflection and giving rise to geomagnetic activities as well as produce the modulation effects on the cosmic rays. In this paper a systematic study has been performed to analyze these BEHF events occurred during solar cycle 23, by dividing them in two categories 1. Associated with coronal holes (CH) and 2. Non -Associated with coronal holes. In this work we used hourly values of IMF data obtained from the NSSD Center. The analysis mainly based on looking into the effects of these transients on earth's magnetic field and analyzing the Forbush decrease events occurred during their time span and characterizing the ground level enhancements. The high-resolution data IMF BZ and solar wind data obtained from GOES satellite was available during the selected period. Dst and Ap are taken as indicator of geomagnetic activities. We have used the Kiel neutron monitor data for this study. It is found that Dst index, solar wind velocity, proton temperature and the Bz component of magnetic field have higher values and increase just before the occurrence of these events. Larger and varying magnetic field mainly responsible for producing the short-term changes in cosmic ray intensity are observed during the BEHF events associated with coronal holes.

## References

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