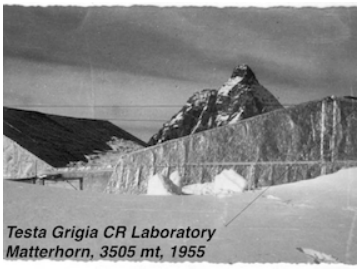

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Forbush Decrease in the Torus Model of a Magnetic Cloud

Tuesday, 6 September 2016 16:30 (1h 45m)

We have calculated the cosmic ray intensity in a magnetic cloud. It is supposed that the magnetic cloud near the Sun has the shape of a torus segment with a magnetic flux rope. The magnetic cloud is located inside the coronal mass ejection with the distribution of the radial velocity. The subsequent propagation of the ejection in interplanetary space is based on an analytic kinematic model. The magnetic field is determined by the freezing-in condition.
It is supposed that the cosmic ray intensity in a magnetic cloud is determined by the large-scale electromagnetic field. We have found the zero, first, and second moments of particle distribution function with different energies. The effect of the regions connecting a magnetic cloud to the Sun ("legs"of the loops) on cosmic ray intensity has been revealed. The comparison of calculation results with measurements is shown.

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