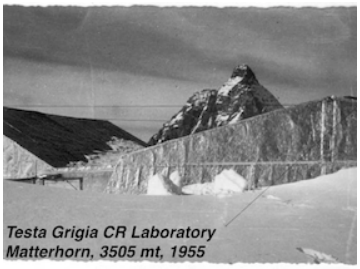

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Acceleration of Particles by Shock Waves in the Solar Atmosphere

Monday, 5 September 2016 17:15 (15 minutes)

Acceleration of solar energetic particles by coronal mass ejection shocks is considered. We have studied the influence of the region behind the shock front on the acceleration process. The external boundary of the coronal mass ejection and the shock front are specified as coordinated segments of spherical surfaces with the different radii. In the calculation we consider nonstationarity of the process, spherical symmetry, and adiabatic losses of particle energy in the extending environment. The influence of the accelerated particles on dynamics of the system and the turbulence level of the magnetic field are not involved in the study. The performed numerical calculations show that the acceleration rate and accordingly the maximum energy in the spectrum are determined by the ratio between coefficients of particle diffusion in regions behind and ahead of the shock front. It was found that the initial coronal mass ejection radius defines the intensity of accelerated particles.

Primary author: Mrs PETUKHOVA, Anastasia (Yu.G. Shafer Institute of Cosmophysical Research and Aeronomy of SB RAS)

Co-authors: Dr PETUKHOV, Ivan (Yu.G. Shafer Institute of Cosmophysical Research and Aeronomy of SB RAS); Dr PETUKHOV, Stanislav (Yu.G. Shafer Institute of Cosmophysical Research and Aeronomy of SB RAS)

Presenter: Mrs PETUKHOVA, Anastasia (Yu.G. Shafer Institute of Cosmophysical Research and Aeronomy of SB RAS)

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