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Ion acceleration by shock surfing

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Collisionless shocks in space conditions are a source of energetic particles. The particles having low velocity along the normal to the surface of the shock front can be multiply reflected from the electric cross potential of a quasiperpendicular shock and be accelerated by shock surfing. Shock surfing can provide pre-acceleration of particles for subsequent diffusive shock acceleration. The research of shock surfing is of interest for calculation of injection and element composition of the accelerated particles.

The calculation method of distribution function of the accelerated particles by shock surfing in that case, when the characteristics of the shock front (the electrostatic field strength and the width of the shock front) are specified. The results of calculation of particle spectra before and behind the shock front depending on taken parameters are shown.

Collaboration

– not specified –

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

Co-author: Dr PETUKHOV, Stanislav (Yu.G. Shafer Institute of Cosmophysical Research and Aeronomy)

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

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