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Acceleration of solar cosmic rays in stochastic non-Gaussian electric fields

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Abstract content

Acceleration of charge particles in stochastic electric fields is considered. The fractional symmetric Fokker-Planck equation is derived on the basis of the Langevin equations and with an assumption that the fluctuations of electric fields are subordinated by the Levy stable laws. From the solution of the equation it is showed that an ensemble of charge particles is relaxed to the power law distribution rather than to Maxwellian one. Analytical results are found to be comparable with the numerical ones. The concerned stochastic process is applied to the acceleration of solar cosmic rays in flares. The possibility of Levy statistic in the solar flares is discussed.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olivo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 1 (SH), pages 113-116

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