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Maximum Energy of Solar Energetic Particles

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The standard diffusive shock acceleration (DSA) model is often invoked for the mechanism accelerating energetic particles around collisionless shocks. We will discuss the maximum attainable energy for solar energetic particles in the context of shock acceleration theory. While the maximum energy can easily be estimated by DSA in the most simplified (i.e., ideal) condition, there are number of effects (e.g., time-dependence, geometry, nonlinear effects, anomalous diffusion) which may alter the acceleration efficiency. In this report, we discuss these effects in the context of solar energetic particle acceleration around strong shocks propagating in the inner heliosphere.

Keywords: collisionless shock, particle acceleration, solar energetic particles