

Particle acceleration at solar flares/interplanetary shocks

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Nonthermal particle acceleration is one of the most important topics in physics of cosmic plasmas. The heliosphere has been playing the role of the astrophysical laboratory for particle acceleration processes, where the basic ideas on various physical mechanisms can be tested against the data from in situ observations. I will review some of recent topics of particle accelerations at interplanetary shocks: How does acceleration efficiency depend on shock parameters, such as shock velocities, Mach numbers, levels of interplanetary turbulence, shock angles, and global/local shock geometries? How are suprathermal particles injected to the acceleration process? What is the difference between ion and electron acceleration processes?