

DISTRIBUTION IN ENERGIES AND ACCELERATION TIMES IN DSA, AND THEIR EF

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We have conducted Monte Carlo simulations of diffusive shock acceleration (DSA) to determine the distribution of energies of particles at various times after injection at the shock with energy E_0 . We obtain separately the distributions of particles remaining near the shock, and those that have escaped downstream. We also obtain the distribution of times since injection taken to reach energy $E > E_0$. We describe simple parametrizations which can be used to obtain by numerical integration the time-integrated energy spectra of particles escaping downstream, and the smoothing effect the energy distributions have on the shape of the cut-off expected using simple treatments (e.g. Protheroe and Stanev, *Astropart Phys*, 10, 185, 1999; Drury et al, *A&A*, 347, 370 1999).