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PEM028-02

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## Supperdiffusion transport of energetic ions accelerated a shock wave

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We study the transport properties of energetic particles in the upstream region of interplanetary shocks considering the possibility of anomalous diffusion, where the density decay profile has not an exponential profile but a power-law behavior. The ACE spacecraft observations at 1 AU show that the energetic ions with energy of 0.55 ~ 0.76 MeV spatial profiles are well fitted by a power law distribution and we have  $\langle dx^2 \rangle \sim t^a$ , with  $a \sim 1.33 \pm 0.01$ . This implies that particle propagation around a near earth orbit can be intermediate between normal diffusion ( $a = 1$ ) and ballistic motion ( $a = 2$ ) even though the power of the magnetic wave is sufficient large to scatter the particles.

Keywords: shock wave, particle acceleration, diffusion process