



ID de Contribution: 52

Type: Non spécifié

## Alfven Wave Amplification and Self-Containment of Cosmic-Rays Escaping from a Supernova Remnant

*mercredi 29 juin 2011 09:35 (20 minutes)*

We study the escape of cosmic-ray (CR) protons accelerated at a supernova remnant (SNR) by numerically solving a diffusion-convection equation from the vicinity of the shock front to the region far away from the front. We consider the amplifications of Alfven waves generated by the escaping CR particles and their effects on CR escape into interstellar medium (ISM). We find that the amplification of the waves significantly delays the escape of the particles even far away from the shock front (on a scale of the SNR). This means that the energy spectrum of CR particles measured through gamma-ray observations at molecular clouds around SNRs is seriously affected by the particle scattering by the waves.

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**Classification de Session:** Cosmic rays at multiple galactic scales.