

## Magnetic field amplification and maximum cosmic ray energy in supernova remnants

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It is widely believed that supernova remnants are the main sources of Galactic cosmic rays. The maximum energy to which particles can be accelerated through diffusive shock acceleration depends on the shock velocity and magnetic field amplification upstream of the blast wave. Magnetic fields can be amplified when escaping cosmic rays trigger a return current in the plasma that drives a current driven instability. The length scale of the field fluctuations determines the energy to which cosmic rays are confined. When cosmic rays are better confined, the current will decrease, generating a feed-back process on the amplification of the magnetic field. We have run simulations in which we incorporate this process and evaluate its self-consistency and effects on the upstream medium.

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