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The Impact of Cosmic Ray Acceleration in Supernova Remnants on Thermal X-ray Line Emission

Abstract content

Efficient cosmic-ray production can have a significant effect on the evolution of SNRs and will modify thermal X-ray line emission as well as producing broad-band continuum radiation. Using a hydrodynamic simulation with ad hoc magnetic field amplification and an approximate treatment for the ionization state of the plasma, we investigate the effects of slow vs. rapid heating of the postshock electrons on the ratio of thermal to nonthermal X-ray emission at the forward shock. We also show that the primary effect of a large field is a considerable flattening of the nonthermal spectrum in the soft X-ray band. Spectral index measurements from X-ray observations may thus be indicators of the postshock magnetic field strength.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

Primary author(s) : Prof. ELLISON, Don (North Carolina State University)

Co-author(s) : Dr. PATNAUDE, Daniel (Harvard Smithsonian Center for Astrophysics); Dr. SLANE, Patrick (Harvard Smithsonian Center for Astrophysics)

Presenter(s) : Prof. ELLISON, Don (North Carolina State University)

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