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Nonthermal Bremsstrahlung v. Synchrotron Radiation: The Nature of the Nonthermal X-ray Emission from Cas A

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Abstract content

We present the results of an analysis of Chandra and RXTE X-ray spectral data for the supernova remnant Cas A. Thousands of Chandra spectra for roughly arcsecond-sized regions were fitted with a simple model that includes a bremsstrahlung continuum and several Gaussian emission lines. The results of this analysis reveal that the faint, narrow filaments around the outer edge of the remnant have unusually high fitted electron temperatures. Since the emission from these regions is thought to be dominated by synchrotron radiation instead of thermal bremsstrahlung, the spectrum at each location along these filaments was fitted with a synchrotron model. The results of the spectral analysis for the regions dominated by synchrotron emission are compared to the results of a spectral analysis of the RXTE composite spectrum of the entire remnant. The comparison is used to determine what fraction of the high-energy nonthermal X-ray emission is produced by synchrotron emission.

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

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olivo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 2 (OG part 1), pages 839-842

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