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Cosmic-ray acceleration and gamma-ray production in the supernova remnant RX J0852.0-4622

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Abstract content

Nearly ten years after the discovery of the supernova remnant RX J0852.0-4622 ("Vela Jr.") with ROSAT in 1998, many important parameters of the remnant are still largely uncertain. Distance estimates range between 200 pc and 1-2 kpc, with correspondingly different estimates on the time and type of the supernova explosion. We present the application of our kinetic theory of cosmic ray acceleration in supernova remnants to RX J0852.0-4622. We investigate whether the broadband non-thermal emission from this remnant - from radio to X-rays to TeV gamma-rays - can be understood, applying different scenarios for the supernova remnant evolution that are compatible with existing broadband data. In all cases we find that the remnant is an efficient hadronic accelerator and that the gamma-ray emission is therefore dominated by Pi^0 -decay. We discuss how the results can be used to put additional constraints on the remnant's distance and age.

If this papers 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 255-258

Primary author(s) : Prof. BEREZHKO, Evgeny G. (Yu.G.Shafer Institute of Cosmophysical Research and Aeronomy, Yakutsk, Russia); Dr. PUEHLHOFER, Gerd (Landessternwarte Heidelberg); Prof. VOELK, Heinrich J. (Max Planck Institute for Nuclear Physics, Heidelberg)

Presenter(s) : Prof. VOELK, Heinrich J. (Max Planck Institute for Nuclear Physics, Heidelberg)

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