

Relativistic shock acceleration simulations and ultra high energy cosmic rays

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The shock acceleration mechanism is invoked to explain non-thermal cosmic rays in Supernova Remnants, Active Galactic Nuclei and Gamma Ray Bursts jets. Especially, the importance of relativistic shock acceleration and ultra high energy cosmic ray production in extragalactic sources such as Active Galactic Nuclei and

Gamma Ray Bursts is a recurring theme, raising a significant interest in the research community.

I will briefly discuss the shock acceleration mechanism, I will address properties of non-relativistic and relativistic shocks and the production of ultra high energy cosmic rays, particularly focusing on extensive relativistic simulation studies.

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