

Efficient cosmic-ray acceleration at reverse shocks in supernova remnants

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When a supernova explodes, a blast wave is generated and propagates into the ambient medium, whereas the deceleration of the ejecta by the ambient medium induces an inward-propagating shock wave, the so-called reverse shock (RS). If the RSs can efficiently accelerate cosmic-rays, then they can be important production sites of heavy-element cosmic-rays. We present evidence for efficient cosmic-ray acceleration at reverse shocks in young Galactic supernova remnants including Cassiopeia A and RCW 86, based on recent X-ray observations with Chandra.

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