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Observational Constraints on Cosmic Ray Acceleration in Supernova Remnants

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Over the past few years, observations in the X-ray and gamma-ray bands, coupled with theoretical investigations, have led to important new insights into the process of particle acceleration at high speed shocks in supernova remnants. In this presentation I will review results largely from the X-ray band that reveal the presence of shock-accelerated relativistic electrons and amplified magnetic fields at these shock fronts. Evidence for shock-accelerated protons, although less direct, appears in the form of modifications to the dynamical evolution of young remnants, particularly SN1006 and the Tycho supernova remnant. As time permits, I will examine other observational topics bearing on the small-scale angular structure and temporal variations in the X-ray synchrotron emission, and particle acceleration at the reverse shocks of remnants.