



**Particle accelerations, plasma instabilities, and collisionless shocks  
in partially ionized plasmas**

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The interstellar medium around supernova remnants (SNRs) is not always completely ionized. Type Ia supernovae are expected to explode in the partially ionized interstellar medium. In fact, the existence of neutral hydrogen atoms around SNRs has been identified in many SNRs from observations of H-alpha emission. In this talk, I'd like to talk about particle accelerations, plasma instabilities, and collisionless shocks in partially ionized plasmas.

References

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