

Gas Towards Gamma-Ray-Emitting Supernova Remnants

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Gamma-ray astronomy may offer answers to a long-standing question of high energy astrophysics: Where do cosmic rays come from? The gamma-ray emission seen from some supernova remnants is now known to be from distant populations of cosmic-rays (probably accelerated locally) interacting with gas, but there is still much work to be done in accounting for the Galactic cosmic-ray flux. The Mopra radio telescope is ideal for probing the interstellar environments of gamma-ray sources through large-scale molecular line surveys. The Mopra Galactic Plane CO Survey can resolve gas involved in gamma-ray generation at a scale comparable to the resolution of future gamma-ray experiments, while giving insights into gas dynamics. Dense gas tracers such as CS and NH₃ have proven to be useful probes of gamma-bright regions, while SiO emission can directly highlight shock-disrupted gas. We present the results of molecular spectral line observations towards supernova remnants at various stages of evolution.

Summary

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