

Supernova Remnants and Star Formation in the Large Magellanic Cloud

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It has often been suggested that supernova remnants (SNRs) can trigger star formation. To investigate the relationship between SNRs and star formation, we have examined the known sample of 45 SNRs in the Large Magellanic Cloud to search for associated young stellar objects (YSOs) and molecular clouds. We find seven SNRs associated with both YSOs and molecular clouds, three SNRs associated with YSOs but not molecular clouds, and eight SNRs near molecular clouds but not associated with YSOs. Among the 10 SNRs associated with YSOs, the association between the YSOs and SNRs can be either rejected or cannot be convincingly established for eight cases. Only two SNRs have YSOs closely aligned along their rims; however, the time elapsed since the SNR began to interact with the YSOs' natal clouds is much shorter than the contraction timescales of the YSOs, and thus we do not see any evidence of SNR-triggered star formation in the LMC. The 15 SNRs that are near molecular clouds may trigger star formation in the future when the SNR shocks have slowed down to $\lesssim 45 \text{ km s}^{-1}$. We discuss how SNRs can alter the physical properties and abundances of YSOs.

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Comments:

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