
The Role of AGB Stars in the Lifecycle of Dust

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Abstract

Asymptotic Giant Branch (AGB) stars are key sites of dust formation, yet their overall contribution to galactic dust budgets – relative to supernova and grain growth in the interstellar medium – remains uncertain. Spitzer infrared observations enabled the first systematic studies of AGB dust production beyond the Milky Way, yielding global estimates in the Magellanic Clouds and other nearby galaxies. With JWST, we can now detect and characterize dusty AGB stars well beyond the Local Group, probing environments across a much broader metallicity range and providing new constraints for theoretical models. In this talk, I will review the current state of observations and model developments that are shaping our understanding of the role AGB stars play in the cosmic dust lifecycle.

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