

Cosmology with Supernovae: Progress and Prospects

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Type Ia supernovae (SNe Ia) are exquisite tools with which to trace the history of cosmic expansion, and they have a starring role in attempts to understand the dark energy that drives our accelerating Universe. I will describe recent progress in this field, including the collection of large, homogeneous samples of distant SNe Ia such as the SDSS SN Survey. As these samples grow, systematics are beginning to dominate statistics, and future prospects for SN Ia cosmology depend on how well we can address issues like constructing an adequate low-redshift SN Ia sample, understanding dust in SN Ia host galaxies, quantifying the evolution of SNe Ia and SN Ia demographics over cosmic time, and constraining models of SN Ia progenitors and explosions.