

Type Ia supernovae as extragalactic distance indicators

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Abstract. Type Ia supernovae (SNe Ia) are among cosmology's most useful tools for measuring extragalactic distances. Their intrinsic brightness, $M_V = -19.2$ mag, and precision, $\sigma = 0.12$ mag, make for a unique combination to precisely probe cosmic expansion from the nearby to the high-redshift Universe. I describe the current state of the art for measuring distances to SNe Ia—focusing on the current challenges which ultimately limit their precision—as well as prospects for further refinement. I also highlight cosmological applications where they have been especially valuable, and briefly review some future projects which plan to exploit SNe Ia.

Keywords. supernovae: general, galaxies: distances and redshifts, cosmological parameters, distance scale
