

Abstract Submitted
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Photometric and Spectroscopic properties of two recent Supernovae representing the types with cosmological implication GOVINDA DHUNGANA, Southern Methodist University — Type Ia supernovae (SNe) have been extensively used in the cosmological context. SNe IIP have also been increasingly studied as competitive distance indicators to provide potential additional constraint. We present the spectroscopy and photometry of two recent, extensively studied nearby SNe: SN 2013ej (IIP) and SN 2012cg (Ia). For SN 2013ej, we observe some spectral peculiarities, most notably the early appearance and successive evolution of Si II $\lambda 6355$. We also compare early UV spectra sample of SNe IIP. We use UV, optical ($BVRI$ and open CCD) and NIR photometry to derive the bolometric flux and also derive a $B - V$ color dependent bolometric calibration that may yield better than 2% precision. We estimate the epoch of shock breakout to be $\text{MJD } 56496.9 \pm 0.3$. Combined with SN 2002ap data, we estimate the EPM distance of $9.0_{-0.6}^{+0.4}$ Mpc. Deriving the photospheric velocity evolution, we estimate the progenitor mass, radius and energy of explosion. Tail luminosity yields the mass of synthesized radioactive material, M_{Ni} to be $0.19 \pm 0.01 M_{\odot}$. For SN 2012cg, we highlight our recent study based on the observation of excess flux during the very early phase (≈ 14 d from B_{max}), which may shed light on the Ia companion, and discuss the implications.

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