

Temporal and Spectral Modelling of Intermediate Luminosity type Ib Supernova SN2015ap.

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In this paper, we present the observed photometric and spectroscopic properties of a type Ib supernova (SN) SN2015ap. Our aim in this paper is to model a reliable progenitor for SN2015ap, which can undergo core-collapse and explain the observed properties of this SN. Initially, this SN shows some broad-lined features like SN2008D and later it shows features matching with normal type Ib supernovae (SNe). We tried to synthetically reproduce the explosion. For this purpose, we modelled a 12 M zero-age main sequence star and evolved it until the onset of core-collapse using the stellar evolution code MESA. Thereafter a synthetic explosion is produced using SNEC, which provides properties such as observed bolometric luminosity, black body radius, temperature and velocity evolution of the photo-sphere. We compare the observed parameters of SN2015ap with those produced by synthetic explosion and find satisfactory agreement with each other supporting a 12 M progenitor for SN2015ap.

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