

# Supernova 2005cs and the origin of type IIP supernovae

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Type IIP SNe are thought to originate from main-sequence stars in the range of 9–25  $M_{\odot}$ . Two approaches can be used to check this conjecture. The first is a detection of pre-SN in archival images. Alternatively, hydrodynamic modeling of light curve can be used to determine the mass. The ejecta mass combined with the mass of a neutron star and the mass lost by the stellar wind gives the progenitor mass. At present, the hydrodynamic mass is measured for only three type IIP SNe. We present results of hydrodynamic modeling of sub-luminous supernova 2005cs. The derived parameters of SN 2005cs fall between those of low-luminosity and normal type IIP SNe. Surprisingly, the mass distribution of progenitors of all studied type IIP SNe is strongly skewed towards the upper limit of stars responsible for this class of SNe, contrary to the expectations based on the Salpeter distribution. We discuss the implications of this intriguing fact.