

TYPE IA SUPERNOVAE AND THEIR PROGENITORS

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I will review the properties of Type I Supernovae, which come from H-depleted stars. Although two very different types of stellar deaths populate the SN I family, the observed features share much of the same physics.

SNe Ia, the thermonuclear explosions of white dwarfs accreting mass to reach the Chandrasekhar limit, are very homogenous in their properties and are used as standardisable candles for cosmology. An analysis of their spectra and light curves yields insights into the explosion mechanism.

SNe Ib and Ic are the result of the explosion following the core collapse of massive stars that had lost their H-envelope. SNe Ib are rich in He, while SNe Ic are not, suggesting that they are caused by the collapse of bare CO cores. SNe Ic show a wide range of properties. The most massive and energetic SNe Ic are linked to Gamma-ray Bursts. Again, the light curves and spectra can be used to derive their properties. Additionally, signatures of strong asphericities can be deduced from their late-time spectra and the polarisation. Such asphericities may indeed be common to all core-collapse SNe. The exact nature of the progenitors of these SNe remains unclear.