The Death of Massive Stars: Gamma-Ray Bursts and Supernovae

Massive stars end their lives in fiery explosions, often leaving behind compact remnants such as neutron stars or black holes. These explosions usually manifest themselves as supernovae, but occasionally reveal themselves as a trillion times more energetic gamma-ray bursts. Because of their large energy output, supernovae and gamma-ray bursts are excellent objects for exploring the life cycle of massive stars and for use as cosmological probes. Here I will give an overview of our current understanding of core collapse supernovae and gamma-ray bursts, their utility as cosmological probes, and highlight future possibilities with space- and ground-based telescopes.