

Binary Star Evolution

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Binary stars lie at the heart of many vital astrophysical phenomena, and several types of explosive cosmic events are produced by binary objects, such as double black holes, double neutron stars, double white dwarfs, type Ia supernovae, and X-ray binaries. Despite the importance of binary evolution, there are still two long-standing unsolved fundamental questions: mass transfer stability and common envelope evolution. We briefly introduce binary star evolution, binary population synthesis fields, and recent progress in mass transfer physics. Finally, we introduce applications in related objects, such as high-mass X-ray binaries, hot subdwarf binaries, and important gravitational wave sources (double white dwarfs and double black holes).

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