

Stellar Evolution in Planetary Systems: How White Dwarf Formation Kicks Can Reshape Orbital Architectures

Thursday 16 January 2025 11:40 (35 minutes)

Observations of evolved stellar binaries over recent years have revealed that stars undergo a mild kick during their evolution into White Dwarfs, most likely caused by a slight asymmetry in their mass loss via stellar winds towards the end of the AGB phase. This kick has a significant impact on the dynamical evolution of stellar binaries and triples, which can cause such systems to separate, but can also lead to stellar collisions. In recent works, I have shown that these kicks can also have a tremendous impact at shaping the evolution of planetary systems and their observations, for example by aiding Hot Jupiter formation in evolving binary star systems, and by obscuring the true dynamical evolution histories of planets around single stars that originated in, later kick-separated, binaries. In this talk, I will present various dynamical processes enabled by White Dwarf formation kicks and stellar evolution, including their implications for circumbinary planets, circumstellar planets in wide binaries, and planets around single stars.

Presenter: STEPHAN, Alexander

Session Classification: Binary and triple systems evolution