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The evolutionary pathways of massive hierarchical triple stars

Massive stars are the progenitors to a vast variety of observed highly energetic transients. Many of these transients are presumably the product of interaction between two or more stellar companions. Until recently, theoretical work has mainly focused on understanding the evolution of single- and binary stars. However, recent observations show that triple (and higher order multiple) star systems are common in the local population of massive stars. Including a third companion adds complexity to the stellar system via three-body dynamical interactions, such as the Von Zeipel-Lidov-Kozai (usually referred to as ZLK or KL) effect. These interactions could potentially alter the evolution of the system and therefore also the predicted rates and properties of astrophysical sources. This implies that complementary studies of triple stars are needed in order to get a more comprehensive picture of the origins of observed transients. In this talk, I will give an overview of the most common evolutionary outcomes of massive triple stars up to their first interaction (e.g. mass transfer). Also, I will compare these results with simulations of isolated binary evolution.

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