

Ages of massive (O) stars: effects of mergers and rejuvenated binary products

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Except for the Sun, ages of individual stars can only be estimated from models or calibrations and are never of fundamental nature. Depending on the stellar type, stellar environment and method of the age inference process, age estimates are subject to various biases and uncertainties. In massive (O) stars, ages are usually estimated by comparing observables of stars such as luminosity, effective temperature and surface gravity to stellar models of single stars. The precision and accuracy of the inferred stellar ages are then thought to be dominated by intrinsic uncertainties of the applied stellar models and the statistical techniques used to match the observations to the models. Such age estimates are made under the fundamental assumption that stars have lived their lives as single stars. However, more than 70% of all O stars are members of close binary star systems and will exchange mass with a companion during their life, sometimes even leading to a merger of both stars. Binary products are rejuvenated and can appear as blue straggler stars. The apparent ages inferred for binary products from single star models are younger than their true ages and can therefore significantly bias inferences made from such objects. I will describe the rejuvenation process, discuss the impact of binary products on age estimates and highlight potential consequences for our understanding of stars and stellar populations.

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