

The Outcome of Massive Star Formation

Wednesday, 17 May 2023 13:15 (1 minute)

Runaway stars (massive stars moving away from the star clusters where they were born at unusually high velocities) have been observed for more than half a century, yet the origins of these high velocities remain elusive to this day. One of the most prominent theories for the origins of runaway stars is the dynamical ejection scenario in which binaries are thought to dynamically interact with either single stars or other binaries and in doing so eject stars from the star cluster. In my project, I explore the dynamical ejection scenario and the conditions under which massive stars are ejected from star clusters through simulations with AMUSE (the Astrophysical Multipurpose Software Environment).

In this poster I present simulations of young star clusters evolved until runaways are detected. The simulations use a variation of initial conditions and parameters such as the initial number of stars, binary fraction, and binary period distribution. Preliminary results show that the majority of ejected stars in these simulations have significantly lower masses and velocities than the massive runaways observed, even under a range of different initial conditions.

Primary author: CURTIS, Beatrix (University of Amsterdam)

Co-authors: KAPER, Lex (Anton Pannekoek Institute); RIEDER, Steven (Geneva Observatory, University of Geneva)

Presenter: CURTIS, Beatrix (University of Amsterdam)

Session Classification: Poster Prizes & closing