



Contribution ID: 32

Type: **Talk**

Long Term Evolution and Dissolution of Star-Forming Regions

Monday, 19 August 2024 09:50 (20 minutes)

Stars will typically spend the first few million years of their lives in their natal star-forming regions. The initial densities in these regions often mean young stars are much more likely to experience the effects of close encounters, massive star stellar winds and potentially even nearby supernovae. Therefore, understanding the dynamical evolution of star-forming regions is key to understanding star (and planet) formation and it tells us much about the stars' early lives. However, the dissolution of star-forming regions into the Galactic disc is much less well understood. Does the dissolution rate depend more on the initial mass, density or virial state of the star-forming region? Using N-body simulations of the first 100Myr of a star-forming region, we aim to understand the effects of various factors on star cluster dissolution. In particular, we focus on the effects of an external tidal field on star-forming regions of varying radii, mass, density and initial degree of spatial and kinematic substructure. In this talk I will present the results from a suite of simulations, and discuss the implications of these regions' evolution on star formation, and the young planetary systems that form simultaneously with the stars.

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Session Classification: Formation of dense stellar systems across cosmic time

Track Classification: Formation of dense stellar systems across cosmic time