

From star clusters to field populations: survived, destroyed and migrated clusters



Contribution ID: 27

Type: **not specified**

Phase space densities of star-forming regions

Tuesday, November 21, 2023 10:30 AM (25 minutes)

The initial conditions of star-forming regions will dictate if they will disperse into the field or survive as bound open clusters. Methods have been developed to characterise star-forming regions and infer the initial conditions of them (i.e. initial density, degree of substructure and virial state). These methods have been used to quantify the spatial clustering of stars within star-forming regions and the overall morphologies of such regions. One such method is the Mahalanobis density, which for stars quantifies a 6D (position-velocity) phase space density, which has been used to infer the initial formation conditions of exoplanet host stars. I have applied the Mahalanobis density to simulations with different initial conditions and find that it is unable to reliably infer the initial conditions of these regions when used by itself. I will show that using multiple methods together enables the initial conditions of star-forming regions to be better constrained.

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Session Classification: Star formation and young clusters

Track Classification: Session 2