



Contribution ID: 30

Type: **Talk**

Realistic initial conditions for young stellar clusters

Monday, 19 August 2024 11:55 (20 minutes)

Initial conditions of stellar cluster simulations generally consist of a monolithic structure. However, both theoretical and observational studies suggest that stellar clusters form hierarchically and therefore host sub-clusters that could trigger stronger stellar interactions. Hence, it is fundamental to include more detailed initial conditions when studying the evolution of stellar clusters and especially stellar dynamics within them. In this talk, I will describe the development of a set of realistic initial conditions for young stellar clusters starting from hydrodynamic simulations of molecular clouds. I will then discuss how to exploit them to perform more realistic N -body simulations and show the impact of these new conditions in the context of compact object formation and merger.

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Session Classification: Formation of dense stellar systems across cosmic time

Track Classification: Formation of dense stellar systems across cosmic time