Contribution ID: **110** Type: **Poster**

Long-Term Dynamical Evolution of Rotating Multiple-Population Globular Clusters

Tuesday, 20 August 2024 17:28 (3 minutes)

We present the results of a set of N-body simulations aimed at investigating the long-term kinematic and spatial evolution of rotating multiple-stellar populations in globular clusters.
Our simulations start with a compact, rapidly rotating, and flattened second-generation (SG) subsystem embedded in the central regions of a more diffuse, and slow rotating first-generation (FG) cluster.
We explore the effects of internal dynamical processes and those driven by the external tidal field. Our investigation provides new insights into the evolution of rotation velocity, anisotropy, and angular momentum evolution of multiple populations in globular clusters and the dependence of these kinematic properties on the stellar mass. Finally, we present the results of the study of the evolution and mixing of the FG and SG spatial properties and discuss how the spatial mixing relates to the stellar kinematics and the kinematic mixing.

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Session Classification: Virtual Poster Presentations

Track Classification: Numerical approaches to modelling stellar systems and their constituents