

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



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Vertical phase diagram of young open clusters: a linear relationship and a simple model

The spiral shape of the vertical phase diagram found by Antoja and collaborators is one of the most conspicuous of the many results provided by Gaia. This structure is observed over a wide range of galactocentric radii for disk stars with ages greater than 1 Ga. Alfaro et al. chose a sample of star clusters with ages less than 30 Ma finding a linear relationship between V_z and Z . We have modeled the kinematics of young disk objects subjected to simple mass density-dependent galactic potential in the solar neighborhood.

We have obtained vertical phase diagrams for different age intervals with data from Gaia open clusters. The simulations reproduce the obtained results except for objects with ages close to 100 Ma, where the largest discrepancy is found.

This simple model represents an interesting starting point to explain the structure of the vertical phase diagram without resorting to other input-hoc.

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