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The dynamics of planet-like objects in star clusters

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The dynamical evolution of planet-like objects in star clusters is not easily observable in star clusters, and it is still not possible in dense star clusters such as globular clusters. I will first introduce previous works that looked into the motion of these objects, and then I will numerically explore the dynamical evolution of such objects, varying the number density of the hosting star cluster. As a final point, I will try to confirm if the relative large abundance of free-floating planets in our galaxy is due to their ejected free-floating planets. I will use NBODY6++GPU-ML (a N-body code which performs simulations with a large number of particles and massless particles, i.e., star clusters with free-floating planets). The results pinpoint how the planet-like objects are not particularly affected by mass segregation, but only by the central gravitational evolution of the core of the star cluster, suggesting that those particles, in relatively dense star clusters, are ejected only at much larger timescales.

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