

Oort Cloud evolution in a long-lived stellar cluster

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Solar type stars typically form as members of embedded clusters, which dissolve on different time scales depending on their masses and densities. Most such clusters are small and short-lived, and Oort Cloud (OC) formation has often been modeled within such a scenario. But Lada & Lada (2003) showed that about equal numbers of stars are formed in clusters with populations of 10^2 , 10^3 and 10^4 stars. This makes it likely that the Sun's birth cluster was more long-lived than assumed in OC formation models. We have investigated what happens to the intermediate and outer parts (in terms of semi-major axis) of OCs that form very early in such massive and long-lived clusters. Our results indicate that the survival of a full-fledged OC after the Sun's escape from this birth cluster depends critically on the existence of a massive inner core, comparable in size to the Sedna population.

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