# How could super-precision astrometry change our view of open clusters?

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**Abstract**

Most stars form not isolated but as part of a clustered group of stars. These young star clusters are initially embedded in the gas and dust they form from and are only fully visible after gas and dust dispersal. The emerging open clusters exist in a wide range of sizes and masses, and their diversity makes it challenging to extract the vital information they contain concerning the star formation process. Only after GAIA arrived it became clear that clusters younger than 10 Myr tend to expand considerably. However, the details of the expansion process are still an open question. I will demonstrate which questions high-precision astrometry might allow addressing, including the early evolution of the binary population and the effect of the cluster environment on planet formation. I will also show that testing ML tools on simulated clusters may significantly increase the scientific yield from the observations.

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