

The Villafranca project: Combining Gaia and ground-based surveys to study Galactic OB groups

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Abstract

The Villafranca project is studying Galactic stellar groups with OB stars combining information from *Gaia* and ground-based surveys. We summarize the status of the project and we present its most important results. The Villafranca project has been used to produce a new astrometric calibration for *Gaia* (E)DR3, which improves the previous one significantly for bright stars. We have discovered that dynamical interactions among massive stars at a very young age (~ 1 Ma or less) can play a significant interaction in the dynamical evolution of clusters. As a consequence, our current view of the massive-star IMF may be distorted and the number of free-floating neutron stars and black holes higher than previously considered.

Our contribution can be found at <https://zenodo.org/records/13887264> in zenodo.org