

The OCCASO open clusters revisited with Gaia data.

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Abstract

Galactic Open Clusters (OCs) are crucial to investigate the formation and evolution of the Galactic disc. However, complete information is available for only 5% of the 2100 OCs in the Milky Way listed in the literature. Therefore, OCs are main targets in space missions (Gaia, Kepler), and in large ground-based spectroscopic surveys. However, these ground-based surveys are mainly sampling the Southern hemisphere OCs (Gaia-ESO survey, GALAH), or do not have a specific program for homogeneously sample OCs (APOGEE). The Open Clusters Chemical Abundance from Spanish Observatory survey (OCCASO) aims to complement these surveys obtaining detailed abundances for more than 20 chemical species in around 30 Northern OCs (Casamiquela et al, 2016 MNRAS 458, 3150). The advent of Gaia Data Release 2 (DR2, Gaia Collaboration 2018, arXiv:1804.09365) has allowed a redetermination of the membership and of the mean proper motions and parallaxes for all known clusters (Cantat-Gaudin et al, arXiv:1805.08726). Using these data, we have revisited the membership of our observed stars and obtained mean parameters for all our OCCASO OCs. Gaia DR2 mean parallaxes and proper motions and OCCASO radial velocities have been combined to obtain 3D spatial velocities and peculiar velocities with respect to the RSR. The results significantly differ from our previous calculations due to the differences with previous proper motions studies. The orbits of the OCs have been calculated using a gravitational potential of the Galaxy with two spirals arms and no central bar (Pichardo et al 2003, ApJ 582, 230). The assumed mass of the arms is 5% of the mass disc. The arms have a pitch angle of 12 deg and a pattern speed of 30 km/s/kpc. All OCs show velocities and orbits typical of the disc. (See poster).