Searching for new members of stellar kinematic groups: kine-chemical tagging FGK stars with GES data

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Abstract

Using the large amount of data provided by the Gaia ESO Survey (GES) we intend to perform a chemical and kinematic analysis of the FGK field stars of the Milky Way observed with *UVES* and *Giraffe*. Using the radial velocities provided by the survey, the astrometry available in the literature and an estimation of the distance using our derived spectroscopic stellar parameters ($T_{\rm eff}$, $\log g$, ξ and [Fe/H]) we make a first kinematic selection of possible members to stellar kinematic groups (moving groups and associations) of difference ages. For these sub-samples of stars we perform a detailed differential abundance analysis (chemical tagging) and use additional information derived from the spectra (rotational velocities, Lithium abundance and chromospheric activity) that will allowed us to discern between real physical structures of coeval stars with a common origin (debris of star-forming aggregates in the disk) and field-like stars (structures formed by resonance interactions, associated with dynamical resonances (bar) or spiral structure).