

New moving groups members in the *RasTyc* sample

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Abstract

We present kinematical properties of X-ray sources identified as field late-type stars with good Tycho/Hipparcos parallaxes and for which we have acquired high-resolution spectroscopic observations. These presumably young stars were selected as optical counterparts of ROSAT All-Sky Survey (RASS) sources by means of the cross-correlation of the RASS and TYCHO catalogues (called the *RasTyc* sample). During the last 20 years, many studies have shown that a fraction of X-ray active and lithium-rich stars are members of young stellar kinematic groups (SKGs). Presently, the SKGs are mainly defined by early-type stars and few studies have focused on the late-type stellar component so far. We have therefore developed two methods based on the space-velocity coordinates (U, V, W) to determine the membership of our candidates to already known moving groups. The reliability of our methods was tested with Monte Carlo simulations and compared with results derived using Eggen's kinematic criteria. Chromospheric activity level and lithium abundance were subsequently used to confirm membership for candidates with high probability entries. The identification of a significant number of late-type members of young SKGs would be extremely important to investigate deviations from local mean star formation history during the last billion years and to search for exoplanets just after the planetary formation stage.

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