

Discovery of co-moving young stars in Cepheus

Patrick Guillout¹, Alexis Klutsch^{2,1}, Antonio Frasca³, Ettore Marilli³, Rubens Freire Ferrero¹, David Montes²

- 1 - Observatoire Astronomique de Strasbourg
- 2 - Universidad Complutense de Madrid
- 3 - INAF - Osservatorio Astrofisico di Catania, Italy

During the course of an ambitious ground-based observing program, aimed at providing crucial information on X-ray active late-type stars in the solar neighbourhood, we discovered some lithium-rich field stars within a few degrees on the sky. Moreover, these young stars are located in the proximity of a nearby young visual binary and its recently discovered co-moving companion.

We present optical observations of these stars conducted on 1–4 meter class telescopes. We acquired both high- and low-resolution optical spectroscopy as well as optical photometry allowing us to investigate in details their nature and physical parameters. Some of them turned out to be spectroscopic binaries. Using the cross-correlation technique and other tools developed by us, we derived accurate radial and rotational velocities and performed an automatic spectral classification for both single stars and double-lined systems. The spectral subtraction technique is used to derive their chromospheric activity level and their lithium abundance.

Both physical (lithium content, chromospheric and coronal activity) and kinematics indicators show that all stars are very young, with age in the range 30–50 Myr. Moreover, all stars show coherent galactic space motions. They could be members of a yet undiscovered moving group similar to the TW Hya association, although it seems to be slightly older and is located in the northern celestial hemisphere. As such, they offer a unique opportunity to study the stage between transition and debris circumstellar disks.