Abstract

During the last years (1999 - 2004), our group has been studying the spectroscopic properties of a large sample of K dwarfs, the young stellar kinematic groups.

Stellar kinematic groups

Stellar kinematic groups (SGs), Superclusters (SC) and Moving groups (MG) are kinematic subgroups of stars (Bastian 1994) that can share a common origin. In our previous work (Montes et al. 2001, MNRAS, 328, 45) we have compiled a sample of late-type stars belonging to different moving groups. In this work we will present the high-resolution echelle spectroscopic observations of the stars belonging to the young stellar kinematic groups: Local Association (Pleiades moving group), 20 - 150 Myr), IC 2391 supercluster (35 Myr), Ursa Major group (Sirius supercluster, 300 Myr), Hyades supercluster (50 Myr), and Castor moving group (200 Myr). The high resolution spectroscopic observations allow us to better determine radial velocities, chromospheric activity and lithium abundance of these objects. The chromospheric activity level of these stars has been analysed using the information provided by several optical spectroscopic features (from the Ca II H K to Call W6 lines). Here we report the detection of flares and flare-like events in some of the K dwarfs of the sample such as PW And, BD+27 1790, DK Leo, and FP Cnc.

Observations

A total of 144 stars have been observed until now. The distribution of the sample is illustrated in Fig. 1. In Fig. 1. different symbols are used from the different observatories (see Table 1).

Spectroscopic survey

Stars have been selected from previously established members of SKG based on photometric and kinematic properties, as well as from new candidates based on other criteria (e.g. radial velocities of chromospheric activity, rotation rate and lithium abundance).

Flare stars

Flares are believed to result from the release of magnetic energy stored in the corona through magnetic reconnection (see Crespo-Chacon et al. 2002). Flares are a common phenomenon (see also Gómez et al. 2002). In more energetic than their solar counterparts. In the dMe stars (or UV Cet type stars) flares are believed to result from the release of magnetic energy stored in the corona through magnetic reconnection (see Crespo-Chacon et al. 2002).

Flare detected during the NOT-SOFIN 2002/08 observing run (RE J0137+18)

Flare detected during the 2.2m-FOCES 2002/07 observing run (RE J0102+60)

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Flare detected during the HET-HRS 2001/12 observing run (RE J0102+60)

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