Abstract

During last years (1999-2004) we have carried out a spectroscopic survey of young single late-type active stars possible members of young stellar kinematic groups, in order to study the kinematic and spectroscopic properties of these groups of stars. One of the results of this survey is the detection of a set of active stars showing noticeable radial velocity variations.

Multiwavelength optical observations have allowed us to determine precise radial velocities by cross correlation with radial velocity standard and thus to confirm or dismiss the binary.

In addition, we have obtained information about orbital solution and about the activity of the chromospheric of these active binary systems using the information provided for several optical spectroscopic features (from the Ca II H & K to Ca II IRT lines) that are formed at different heights in the chromosphere.

The chromospheric contribution in these lines has been determined using the spectral subtraction technique. For radial velocity that is in agreement with the value given by Strassmeier et al. (2000), indicating that this component is a single star.

We have found emission lines filling the absorption lines in Hα, and Ca II IRT indicate a certain level of activity.

Observations

The spectroscopic observations of these binaries were obtained from 28 March to 17 April 2004 using the 2.2m Telescope of the German-Spanish Astronomical Center (GSAC) on La Palma in the Canary Islands. The fibres of the Fiber Optics Cassegrain Echelle Spectrometer (FOCES) fitted at the 4.2m Gran Telescopio Canarias (GTC) of Roque de los Muchachos Observatory, La Palma, Spain, during the period from 18 February to 24 April 2004, were used.

The radial velocity of the primary component of both spectroscopic binaries is derived from the position of the cross-correlation peak. In the case of BD+39 2587, this is the A component. We have obtained an orbital solution, with a high eccentricity for both components, and the relation of masses derived from the orbital solution.

Chromospheric activity indicators

The chromospheric contribution to the different optical chromospheric activity indicators, has been determined using the spectral subtraction technique Montes et al. (1995, 1997, 1998). The synthesized spectrum was computed using the program SYNSPEC developed at Penn State (Badnell 1981). We have obtained the subtracted spectra for all the optical indicators Ca II H & K (C2HK, C2H and C2K lines), the Hδ (Hδ A), and the line Hδ (Hδ A) and Hδ (Hδ A) lines are plotted in Figs. 3, 4, 5, and 6. Figure 3 shows the comparison of the Hδ emission in the full and the subtracted spectra (dotted line) in the left panel and the subtracted spectrum (dotted line) in the right panel.