OPTICAL POSITION AND PROPER MOTION FOR X-RAY SOURCES SOUTHEASTERN OF THE OPHIUCHUS MOLECULAR CLOUDS

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ABSTRACT. Here we are interested in defining the optical counterpart and to determine acurate positions and proper motion of approximately three hundred X-ray sources observed by ROSAT. These sources are distributed in a region at the southeastern of the Ophiuchus molecular cloud complex. This region is specially interesting mainly due to the fact that it contains PMS stars that are "isolated" from molecular clouds. The identification of new PMS stars and the proper motion measurements in this region is important to understand why these stars are far from the molecular clouds and their formation mechanism. The X-ray sources considered here form a list of new possible PMS stars candidates that were selected by using X-ray hardness ratios.

1. WORK MOTIVATION AND DEVELOPMENT

The knowledge of proper motion of young stars can contribute significantly with the study of their formation mechanism (Lépine and Duvert 1994) and their membership properties. They can contribute too for the detection of young star candidates.

The work presented here, is part of a more general project that aim the measurements of positions and proper motions of a big number of pre-main sequence (PMS) stars already identified in the literature, detection of new PMS stars and study of their kinematics.

Here, we present the preliminary results of the measurements of positions and proper motions of the optical conterpart of about 300 ROSAT All-Sky Survey sources. These sources are in a region southeastern of the Ophiuchus star-forming clouds where are found some "isolated" T Tauri stars. As the PMS stars have been over the years, found and associated to molecular clouds the presence of these "isolated" T Tauri stars here, is interesting and claim for an explication. Naturaly, the detection of other young stars in this region and the kinematic parameters for these stars, are essential to understand as these stars can be "isolated" from the star-forming region.

We work with ROSAT data because the T Tauri stars are X-ray sources. Of course, the possible young nature of some of these objects can only be deduced by spectral observations.

We obtain the positions and proper motions by combining recent and ancient optical positions by weighted least square (Teixeira et al. 2000). The recent positions come from CCD meridian observations at Bordeaux (Viateau et al. 1999), El Leoncito (Muiños et al. 2003) and Valinhos (Dominici et al. 2000) and also, observations with the Danish 1.5m ESO telescope. The old positions come from the literature: AC2000(Urban et al. 1998), USNO(Monet et al. 1998), UCAC1 (Zacharias et al. 2000), Tycho2 (Hog et al. 2000), and from the digitalization of plates at MAMA (Guibert et al. 1984).

In Figure 1 we show the VPD for about 180 sources X where we highlight some PMS and ZAMS stars indentified in the literature. We can note a reasonable coincidence between the proper motions of some of these PMS stars but this fact doesn't point out a particular distribution for these stars.

We make an external check of our results by comparing the proper motions obtained here with the Tycho 2 one. The Figures 2 and 3 show the comparison in right ascension and declination proper motion. As we can see we have a very good coincidence with Tycho 2 proper motions in both coordinates. Our data don't show systematic tendency. The mean difference is 0.1mas/yr and the standard deviation 2.2 and 2.5 mas/yr to right ascension and declination, respectively. However, we have to keep in mind that this comparison was made only with the brightest stars and an analysis for the fainter stars is necessary.

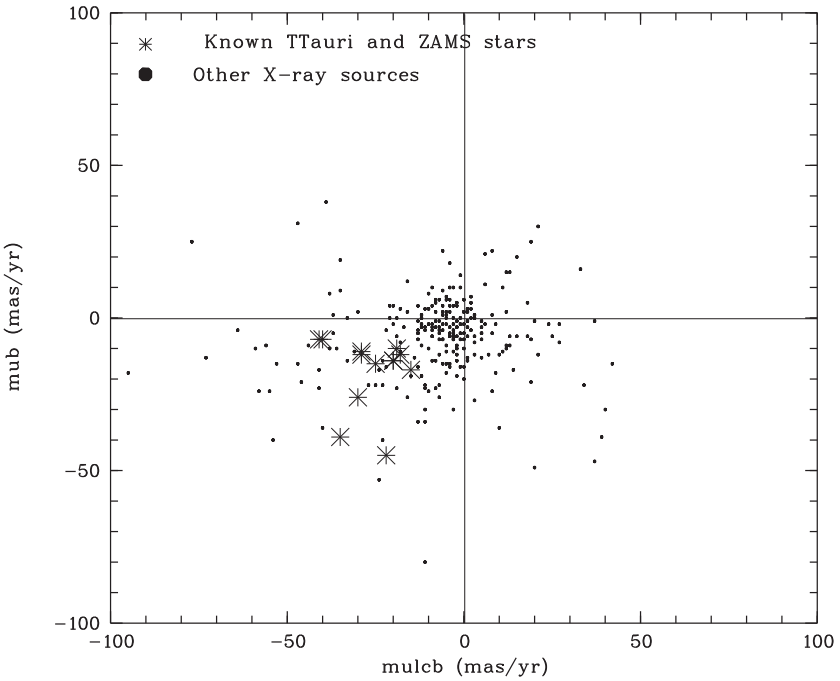

Figure 1: Proper motion diagram

Our results are very preliminary and many recent observations have still to be added to our data. We expect then to solve some identification problems and to improve the quality of the position and proper motion measurements

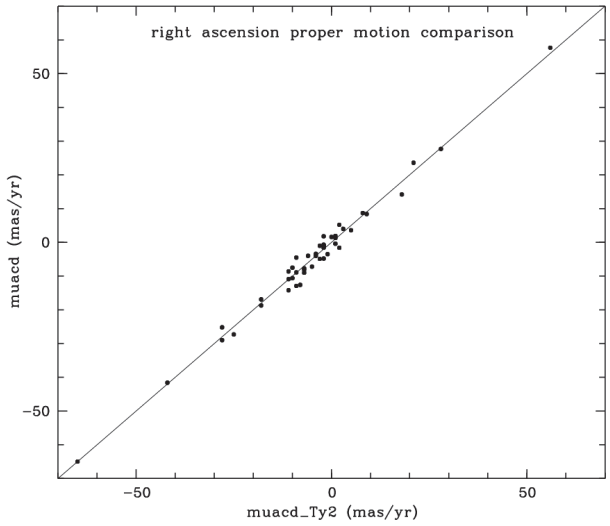

Figure 2: Right ascension proper motion comparison with Tycho 2 data

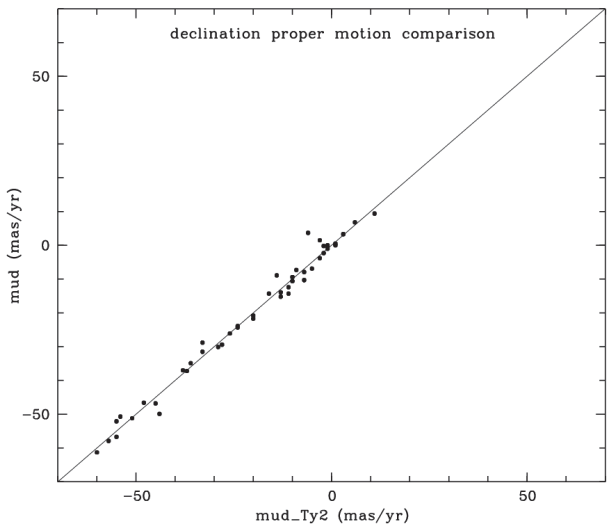

Figure 3: Declination proper motion comparison with Tycho 2 data

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