
Activity and Rotation in the young cluster h Per

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Abstract

We study the rotation-activity relationship for low-mass members of the h Per cluster at an age of 13 Myr. By this age, all stars have terminated their accretion phase and start their spin up to the zero-age main sequence. Rotational periods of h Per low-mass stars have been derived by Moraux et al. (2013) in the framework of the MONITOR project (Aigrain et al. 2007; Irwin et al. 2007). To constrain the activity level of h Per members we have analyzed a deep Chandra/ACIS-I observation.

In the Chandra observation we have detected 1010 X-ray sources located in the central field of h Persei. Assuming a distance of 2300 pc their X-ray luminosity ranges between 2×10^{29} and 6×10^{31} erg/s. Among the 1010 x-ray sources ~ 600 have as optical counterpart candidate members of the cluster with masses ranging down to 0.3 solar mass, and ~ 200 have also measured rotational period.

For this sample of ~ 200 h Per members we have compared X-ray luminosity and rotational periods for different mass ranges. We have found that solar type stars (1-1.3 solar mass) show evidence of supersaturation for short periods. This phenomenon is unobserved for lower mass stars.

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