The changing magnetic fields of intermediate-mass T-Tauri star

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Abstract

We still don't know why 5 to 10% of intermediate-mass main sequence stars own a "fossil magnetic field" (i.e. a magnetic field not continuously sustained from dissipation) while the others lost their magnetic field during the convective/radiative transition, that takes place during the pre-main sequence phase. We want to bring observational constraints on a population of intermediate-mass pre-main sequence stars in order to better understand why dynamo fields relax into fossil fields in only 5-10% of the cases. Through GAIA distances estimations, photometric measurements, and spectropolarimetric data from HARPSpol and ESPaDOnS of 38 intermediate-mass pre-main sequence stars, we determined some of their fundamental stellar parameters. We also detected (if any) surface magnetic fields using the LSD method. We determined Teff, L and vsin(i) with an unprecedented accuracy on IMTTS, and for the first time on such a large sample. I will present the implications of these results on our understanding of fossil magnetic fields.

Keywords: intermediate, mass stars : pre, main sequence stars : fossil magnetic fields : dynamo fields

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