

Age of Pre-Main Sequence stars from lithium: Bayesian analysis of young binary systems

Monday, 18 September 2017 17:39 (2 minutes)

In principle the surface lithium abundance ($A(\text{Li})$) of PMS-type stars can be used to derive stellar ages by means of evolutionary models. Unfortunately, the disagreement between predictions and observations does not confirm the method. Note that uncertainty on different input physics (eq. of state, nuclear cross sections,...) and physics mechanisms (external convection, diffusion,...) lead to different predictions of $A(\text{Li})$. The possibility to date low mass PMS stars from $A(\text{Li})$ was tested on binaries whose common chemistry and age of components constraint the model s. By high-resolution spectroscopy we doubled our sample and derived stellar parameters solving the radiative transfer equation. To compute a suitable grid of models we implemented the Frascati Raphson Newton Evolutionary Code with the accurate Trojan Horse Method rates for Li reactions. Ages were determined by Bayesian analysis. The method, commonly adopted for systems with known masses, was extended to the most common SB2.

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Session Classification: quick poster presentations