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ON THE PHYSICAL PROPERTIES OF TWA-2M1207

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We have studied some physical properties of 2M1207 (member of TWA). Previously estimated age for this moving group is ∼10 Myr. The chronology has been carried out by analysing different properties of this object ($T_{\rm eff}$, gravity, accretion/activity and lithium) in the optical and IR and comparing them with well-known star-forming regions and open clusters, as well as theoretical models.

We present a study on the age of the TW Hydrae Association (TWA), a young, nearby moving group which includes a few dozen stars and brown dwarfs. An accurate analysis has been made on the physical properties of one of its members, 2M1207. This member is of particular interest due to its complexity: a double system (brown dwarf + planetary mass companion; Chauvin et al. 2004) where the brown dwarf is still undergoing active accretion (Mohanty et al. 2003) and harbours a circumsubstellar disk (Sterzik et al. 2004).

The age of TWA has been estimated to be 10^{+5}_{-2} Myr by analysing different properties of its members (Barrado y Navascués 2006). The physical properties of 2M1207 have been derived using low-resolution (R∼900) spectra in the wavelength range 0.9–2.5 μm, obtained with the SOFI instrument on the 3.6-m telescope at La Silla; and medium-resolution (R∼2600) spectra, 6200–7800 Å taken with the Magellan/Baade telescope and the Boller & Chivens spectrograph. We have compared these spectra with templates from members of the Cha I dark cloud and field targets as well as with models of low mass stars and brown dwarfs by Allard et al. (2001). From the comparison with the theoretical models, we have derived $T_{\rm eff}$ and gravities (by model fitting on different gravity indicators, such as K I doublets at 7664.91 & 7698.97 Å and 1.244 & 1.252 μm) for 2M1207 and two more members of TWA (see Fig. 1). Using isochrones and evolutionary tracks from Baraffe et al. (2003) we give an estimation of the age of 2M1207 slightly larger than 10 Myr, in good agreement with Barrado y Navascués (2006) and Mohanty et al. (submitted).

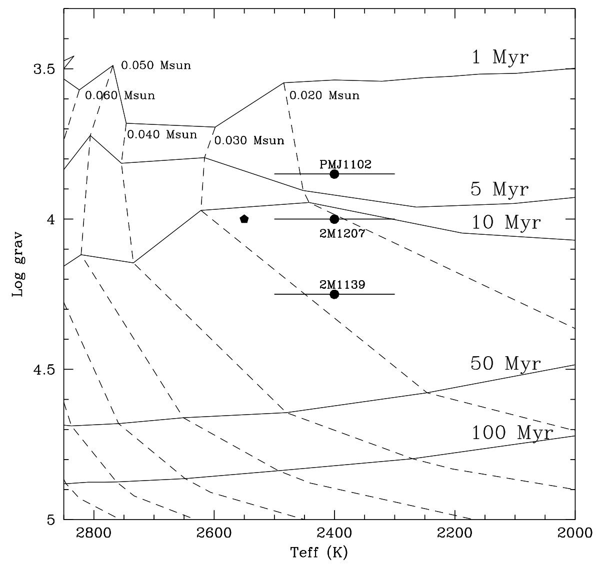

Fig. 1. $T_{\rm eff}$ vs log g_* diagram for the sources of the TW Hydrae Association with isochrones and evolutionary tracks (Baraffe et al. 2003). Error bars correspond to the 100 K step on the $T_{\rm eff}$ parameter of the models. Solid pentagon corresponds to the location of 2M1207 in the diagram for the values of $T_{\rm eff}$ and log g_* obtained by spectral synthesis in Mohanty et al. (submitted).

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