Instituto de Astronomía, sede Ensenada
UNAM, México

Seminario

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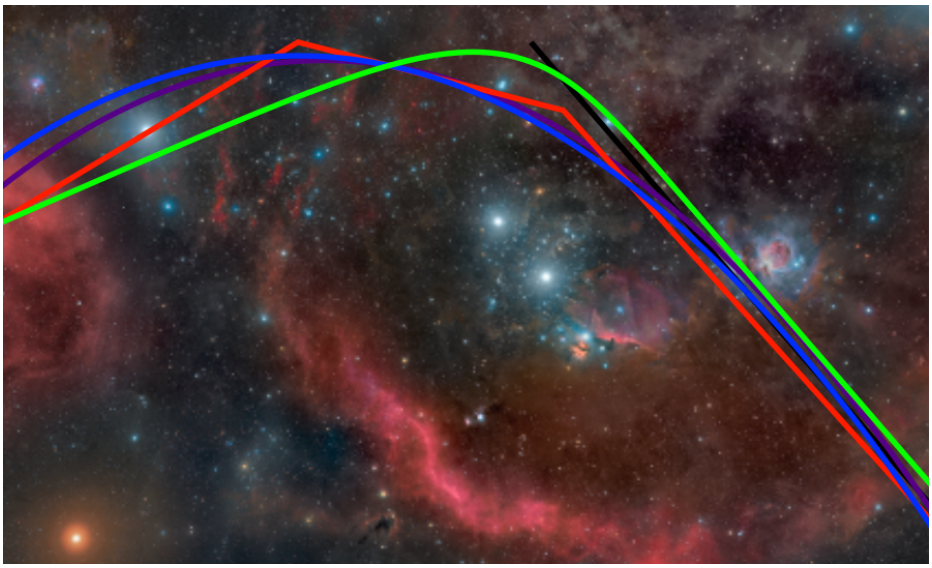
Towards a Complete Study of the Initial Mass Function and Early Kinematics Evolution of the 25 Orionis Stellar Group



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The stellar initial mass function (IMF) is an essential input in many astrophysical studies but, despite the numerous contributions to this topic, its shape is still under investigation, mainly in the low mass regime. Using optical and NIR photometry from DECam and the CIDA Deep Survey of Orion, as well as public data from Hipparcos, UCAC4, VISTA and 2MASS, we selected more than 1500 member candidates of the 25 Orionis stellar group (25 Ori) on the basis of their position in color-magnitude and color-color diagrams. We estimated the contamination in this sample by field stars and extragalactic sources working with a control field at the same galactic latitude of 25 Ori. Using the M_{Ic}-mass relations from the stellar models by Baraffe et al. (2015) and Marigo et al. (2017), we estimated the masses of the member candidates. With this masses we constructed the system IMF of 25 Ori from $12.9M_{sun}$ down to 9 M_{Jup}. We fitted several parameterizations to the resulting IMF to compare their parameters with those in other star forming regions. Additionally, we present the advances in the follow-up spectroscopy in order to determine the membership of the member candidate sample to construct the system IMF with a statistically complete sample of confirmed members of 25 Ori. So far, this spectroscopic survey is ~85% complete using low-resolution spectra from GTC/Osiris (Downes et al. 2015), MMT/Hectospec and SDSS-III/BOSS (Suárez et al. 2017), and high-resolution spectra from SDSS-IV/APOGEE-2 and OAN-SPM/Echelle. With the high-resolution spectra we studied the radial velocity dispersion of the intermediate-mass members and, considering the total mass estimated for 25 Ori, we conclude than 25 Ori is gravitationally unbound.

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