Gaia study on the formation of intermediate mass stars.

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Abstract

Herbig Ae/Be stars are intermediate mass Pre-Main Sequence objects, thus constituting a bridge between the low mass T-Tauris and the non-optical Massive Young Stellar Objects. Therefore they are a key subset for understanding the differences in formation mechanisms between the low and high-mass regimes. We have derived luminosities, optical variabilities and infrared excesses for most known Herbig Ae/Be stars (Vioque et al. 2018). In addition, by using Gaia parallaxes, we placed 218 of these objects in an HR diagram, which allowed us to homogeneously estimate masses and ages for the most complete sample of Herbig Ae/Be stars to date. Our main conclusions after analysing the sample are that high-mass stars mostly do barely display an infrared excess and show little optical variability. We do note that the break is around $\sim 7M_\odot$. This may be related to dusty disks which signpost a different or more efficient disk dispersal mechanism for high mass objects. We also found that $\sim 25\%$ of all Herbig Ae/Be stars are strongly variable. These variable sources mostly present doubly peaked Hα line profiles, which trace edge-on disks. This project has received funding from the European Union’s Horizon 2020 research and innovation programme under MSCA ITN-EID grant agreement No 676036. [See poster]