

# **Density, temperature and kinematics of the MYSO AFGL 2591**

**- Fernando Olguin**

In order to understand the formation of massive stars it is important to study the physical processes that dominate their formation. These processes leave an imprint in the circumstellar matter, e.g. by modifying its distribution. By studying massive young stellar objects (MYSOs), where the star has not started to ionise its surroundings, we can obtain insights about infall and outflow processes early in the formation process. We have conducted a detailed study of the proto-typical MYSO AFGL 2591 in order to constrain its density and temperature distributions and kinematics. For this, we model multi-wavelength high-resolution observations by using radiative transfer tools. In this presentation/poster I will show the latest results from this study. In particular, we explained the morphology of resolved 70 micron Herschel observations and found evidence of rotation of the inner envelope/disc. This work put some limitations on the commonly used analytic rotating infall model of Ulrich (1976), thus models which include other physical parameters may be needed to improve the fitting. These results will also help us to model a larger sample of MYSOs observed at high angular resolution by e.g. ALMA.

*Cores and embedded objects*