
Hybrid Radiative Transfer Methods for Prestellar Isolated Core Collapse : A comparison of RT methods for Massive Star Formation

Raphaël Mignon-Risse*¹

¹Université Paris Diderot - Paris 7 – CE Saclay AIM – France

Abstract

In the context of numerical simulations of massive star formation, the treatment of **radiative transfer** has a non-negligible impact on the launching of outflows, on the accretion and hence on the final mass of the star. In particular, as a consequence of **grey** radiative transfer (opacities averaged over the whole frequency domain), the opacity corresponds to frequencies related to the blackbody temperature of the protostar disk despite the fact that some photons are emitted at the star temperature and therefore at much higher energy. This implies an important **error on the temperature** (up to 38% in a moderately optically-thick regime, Kuiper et al 2010) and a radiative force underestimated by a factor of a few hundreds, in the case of an isolated star irradiating a disk. We present results of **frequency-dependent** radiative transfer 3D simulations of a protostar irradiating a disk.

*Speaker