



ID de Contribution: 6

Type: **Oral presentation**

## Dust dynamics during the gravitational collapse

*jeudi 29 février 2024 12:00 (15 minutes)*

Interstellar dust is about one percent of the mass of the interstellar medium. However, its presence significantly impacts stellar formation scenarios and observations in the visible, the infrared and the sub-mm, e.g. via the dust grains opacity, the surface chemistry, the coupling with the gas and the magnetic field, and the formation of planetary cores.

We are currently working on self-consistent descriptions of the dust dynamics together with the gas and the magnetic field during the gravitational collapse, which is the origin of the formation of protostars and protoplanetary disks. These models consider a grain size distribution, so we would be able to explore some cases for which the standard MRN distribution (5nm-250nm) is no longer valid, as recent observations by the JWST of the dense Chamaeleon I cloud (micrometer grains) suggest. We fully take the inertia of the grains into account, in order to model the dynamics of the biggest grains correctly. Predictions in typical dense cores conditions are achieved analytically, thanks to the study of the propagation of waves, and numerically, by implementing a multifluid of dust in the RAMSES code.

### **Astrophysics Field**

InterStellar Medium

### **Day constraints**

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