

Dust from the diffuse ISM to protoplanetary discs: where do we stand ?

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Dust is ubiquitous in the ISM. Contemporary instruments reveal the dust grains with unprecedented details and add continuously new constraints on the dust grain population. Observations, theory, numerical simulations and laboratory experiments related to the ISM physics and chemistry cannot bypass the dust component. Observations rely on the dust emission to infer various properties of the ISM: gas, magnetic field, radiation field. Theory and numerical experiment need realistic dust grain models to study the interactions of the gas and dust mixture with the radiation and the magnetic fields. We aim to discuss the recent developments made by the PCMI community on the dust and to foster interactions on this timely subject.

The workshop will favour discussion around the three following axes:

1) Is the dust a good proxy for the gas at all scales in the ISM? What are the different friction regimes?

2) How models and experiments compare with observations? What is the most critical parameter to model dust observations: dynamical coupling with the gas, coagulation/fragmentation, dust grain composition/optical properties?

3) What is left to be explained? Which physics is missing? How could laboratory experiment help in understanding dust properties?