

Séminaire organisé par

**AIM & Le service d'Astrophysique
CEA/DSM/Irfu**

THE HERSCHEL VIEW ON THE DUST PROPERTIES OF THE LARGE MAGELLANIC CLOUD

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SAP

The electromagnetic emission from a galaxy contains information about the physical conditions there in experienced. In star forming regions, most of the power is reradiated by dust, in the infrared. The knowledge of the grain properties (their chemical composition and size distribution) is therefore crucial to interpret observations of star forming galaxies, nearby and distant. However, the dust properties are known to evolve with their environment, and this evolution is currently poorly constrained.

I am going to present a study aimed at tackling this major open issue.

It focuses on the infrared observations (with Spitzer and Herchel) of the Large Magellanic Cloud (LMC), a nearby galaxy (50 kpc) containing several massive star forming regions. Its deficiency in heavy elements (about half solar) makes it an ideal laboratory to study the interstellar medium at an earlier stage of evolution than the Milky Way.

After a general introduction on the physics of interstellar dust and the challenges of this topic, I will present the systematic modelling we have performed and show that Herschel observations of the LMC are incompatible with the grain composition of the Milky Way. In particular, I will discuss the fact that the comparison of the dust emission to the gas tracers requires grains with a larger submillimetre opacity. In addition, I will show that the presence of molecular hydrogen not traced by CO is not biasing our interpretation. Finally, I will discuss the origin of the submillimetre emission excess seen in the LMC as well as in other dwarf galaxies.

10 novembre 2011

11h00 Salle Galilée bât 713 C - Orme des Merisiers



Un café sera servi 15 mn avant le séminaire