



## **SEMINAIRE régulier du Service d'Astrophysique**

### **Star formation and molecular gas in early-type galaxies - infrared tracers and diffuse PAH emission**

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**Jeudi 24 février 2011**

**11h00**

Recent results of UV, optical spectroscopy, millimeter and radio observations reveal that a significant fraction of early-type (E and S0) galaxies host reservoirs of cool gas and recent and/or ongoing star formation. But are the properties of star formation and cool gas the same in these bulge-dominated galaxies as in the more commonly studied spiral, starburst and irregular star-forming galaxies? First I will show what a handful of these star-forming early-type galaxies look like in detail, with CO and HI maps for the cold gas and optical IFU spectroscopy to detect young stars. Many commonly used star formation indicators fail or are less reliable in E and S0 galaxies than in the spirals and starbursts against which they were calibrated. But despite these problems, the E and S0 galaxies surprisingly lie almost entirely within the large scatter of the Schmidt-Kennicutt law when the normal SF conversions are used.

One reason SF tracers may be less reliable or need recalibration in early-type galaxies is a substantial contribution to dust heating from older stars. The PAH emission is supposed to be the least biased by this, with the steep cross-section drop off between the UV and optical. However, studies of the Milky Way and a few external galaxies detect PAH emission in the diffuse ISM, far from sites of star formation. In the second part of this talk, I quantify the fraction of PAH emission from diffuse sources for a sample of local spiral galaxies.



**Un café sera servi 15 minutes avant le séminaire**

**Ce séminaire aura lieu au CEA Saclay – Orme des Merisiers –bâtiment 709, Salle 003.**