Jeudi 14 mars 2019 à 11h30 (IAS, bâtiment 121, salle 1-2-3)

Probing the interstellar medium with dust in galaxies

Caroline Bot (Observatoire Astronomique de Strasbourg)

Why should we study dust in nearby galaxies? Well, let's ask why should we study the interstellar medium (ISM) in nearby galaxies in the first place?
One of the arguments is that, unlike in our galaxy, we get to have an outside view. With the advent of ever increasing resolution observations, we are indeed at a stage where nearby galaxies are well resolved and we can now study individual molecular clouds, HII regions or intercloud regions and get an overview of the ISM in its different phases. Another (related) argument is that we can observe the state of the ISM in a wider variety of environments and wonder whether and how the composition or physical properties vary.
In that context, dust can be arguably used as the best tracer of the interstellar medium. Dust is present in all gas phases and thanks to the relative brightness of dust emission, it is sometimes more easily observed than gas. However, this super-power does not come at no cost and there are many caveats to the interpretation of dust emission: which dust model and/or which dust properties should we use? How do we disentangle the foreground and background emission from the one of the studied galaxies?
I will therefore advocate that understanding dust in nearby galaxies is important to understand dust grains in general, as well as to understand the interstellar medium of galaxies.