# Dust properties in the millimeter to centimeter wavelength range: analysis of a sample of nearby galaxies

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Compared to the infrared and radio domains, there are very few observations of dust emission in the millimeter to centimeter wavelength range. The naïve picture is that it is the thermal Rayleigh-Jeans emission from big grains. Yet resolved sub-mm and mm observations in our galaxy and nearby galaxies have shown possible breaks in the emission law, or excess emission at long wavelengths. Laboratory measurements of dust analogs have shown more complex spectral emission laws as well with variations in temperature, …
The aim of our study is to use the diversity of environments given by nearby galaxies to study dust emission at long wavelength thanks to archival Planck and IRAS data.
Building SEDs of galaxies observed with IRAS and Planck will give an idea of the spectral shape of the dust emission and gain insight on dust properties in galaxies in a systematic way. The idea is to also advance our understanding of dust in general and its evolution with the environment (different galaxies).
One of the difficulties for these galaxies is that other foreground and background emission sources mix and often dominate the observed emission. We had to subtract these emissions to have access to this rarely covered wavelength range. But in return, we obtain the integrated emission of the galaxies in the millimeter to centimeter range.
The SEDs of the sample of nearby galaxies will be presented. The SEDs were fitted with simple dust, free-free and synchrotron emission model. I will present the dust properties we obtained and we will see whether the emission is consistent with the naïve modified blackbody spectral shape. These results will also allow to compare results for our nearby galaxies to those of distant galaxies.