Seminarium Astrofizyczne

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Studying the evolution of dust in nearby galaxies

Most of our knowledge of dust grain properties comes from studies of the Milky Way (MW). However, the latter is limited by a narrow range of environmental conditions and by confusion along the sightline. As a consequence, nearby galaxies are becoming more and more important to constrain dust properties in different ambients. Harbouring a wider diversity of metallicities, star-forming regions, etc., nearby galaxies allow us to study dust grains in extreme conditions and constitute a necessary intermediate step towards understanding distant galaxies.

In this talk, I will present the major and latest results of the project ICED. The main objective is to put constraints on dust grain evolution and properties under the diverse environmental conditions that can be observed in local galaxies. The study is applied to a selection of nearby galaxies in the multi-wavelength DustPedia Archive, that is being observed at 1 and 2 mm by NIKA2 (IRAM 30-m telescope), at unprecedented resolution (i.e., 12" and 18" respectively), as a part of the European consortium of NIKA2 Guaranteed Time program, IMEGIN (PI Madden). Interstellar dust grain properties, such as composition, size, geometry, temperature, mass, etc., are derived by the pixel-by-pixel modelling of galaxy optical-to-cm Spectral Energy Distribution (SED) using the THEMIS dust evolution model (Jones et al. 2017), implemented within the hierarchical Bayesian SED fitting code HerBIE (Galliano 2018).

Serdecznie zapraszam,
        Agnieszka Majczyna