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High-resolution, 3D radiative transfer modeling of barred galaxies M83 and NGC1365

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Within the framework of the DustPedia project we study the effect of cosmic dust on a vast sample of nearby galaxies. Dust radiative transfer (RT) simulations provide us with the unique opportunity to study the heating mechanisms of dust by the stellar radiation field. From 2D FITS images we were able to derive the 3D geometry distributions of stars, a technique, first introduced by De Looze et al. (2014) and followed afterwards by Viaene et al. (2016). This powerful method allows a more realistic description of the complex stellar geometries found in galaxies like asymmetric features or clumpy structures.

Our aim is to analyze the contribution of the different stellar populations (old, young & ionizing) to the radiative dust heating processes in the nearby face-on barred galaxies NGC1365 and M83, by using high resolution 3D radiative transfer modeling. To model the complex geometries mentioned above, we used SKIRT, a state-of-the-art, 3D Monte Carlo RT code designed to model the absorption, scattering and thermal re-emission of dust in a variety of environments.

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Yes

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