Galaxies in 3D across the Universe
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The relation between the gas, dust and total mass in edge-on spiral galaxies

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Abstract. Each component of a galaxy plays its own unique role in regulating the galaxy's evolution. In order to understand how galaxies form and evolve, it is therefore crucial to study the distribution and properties of each of the various components, and the links between them, both radially and vertically. The latter is only possible in edge-on systems. We present the HEROES project, which aims to investigate the 3D structure of the interstellar gas, dust, stars and dark matter in a sample of 7 massive early-type spiral galaxies based on a multi-wavelength data set including optical, NIR, FIR and radio data.

Keywords. galaxies: spiral - galaxies: evolution - galaxies: formation

1. The HEROES project

The HEROES (HERschel Observations of Edge-on Spirals, Verstappen *et al.* 2013) project was set up as part of three projects to study the distribution of the various components in a total of 32 edge-on galaxies of different Hubble types. The edge-on geometry is crucial for two reasons. Firstly, the dust in edge-on galaxies is visible both in emission (in the FIR/submm) and in absorption (in the optical/NIR). Fitting detailed radiative transfer models to our data using the SKIRT (Baes *et al.* 2003, 2011) and FitSKIRT (De Geyter *et al.* 2013) codes, we determine the dust and stellar distribution in unprecedented detail. Secondly, edge-on galaxies are the only systems that allow to study both the radial and the vertical structure. We will combine our radiative transfer models with kinematical models of the gas content (Allaert *et al.*, in prep.) and dynamical rotation curve decompositions to obtain a full 3D picture of our sample galaxies.

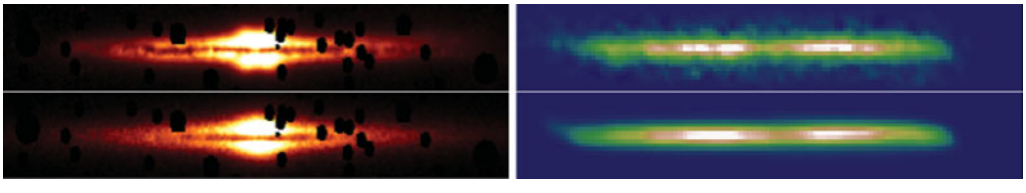

Figure 1. Left: V-band image (top) and FitSKIRT model (bottom) of the HEROES galaxy IC 2531. Right: Observed (top) and model (bottom) total intensity map of the atomic gas in the same galaxy. Note that the physical scales in the left and right images are different.

References

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