3D radiative transfer modelling of face-on DustPedia galaxies

GHENT UNIVERSITY

Sam Verstocken *(sam.verstocken@ugent.be)*
Angelos Nersesian, Sébastien Viaene, Ilse De Looze, Maarten Baes

DustPedia
www.dustpedia.com

OBSERVATION *(M81)*

3D MODEL

Old: 8 Gyr
Young: ~100 Myr
Ionizing: < 10 Myr

3D MONTE CARLO RADIATIVE TRANSFER
shooting billions of photons ...

SKIRT

Dust mass: 1.28 x 10^7 M_{sun}

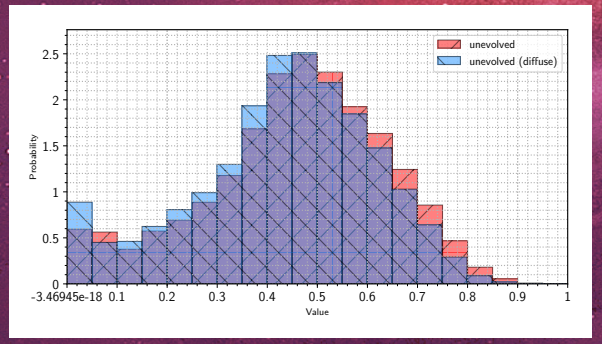
Young stellar luminosity (FUV): 4.25 x 10^{36} W/micron

Ionizing stellar luminosity (FUV): 5.02 x 10^{35} W/micron
-> SFR = 0.11 M_{sun}/yr
-> internal dust mass: 2.38x10^5 M_{sun}

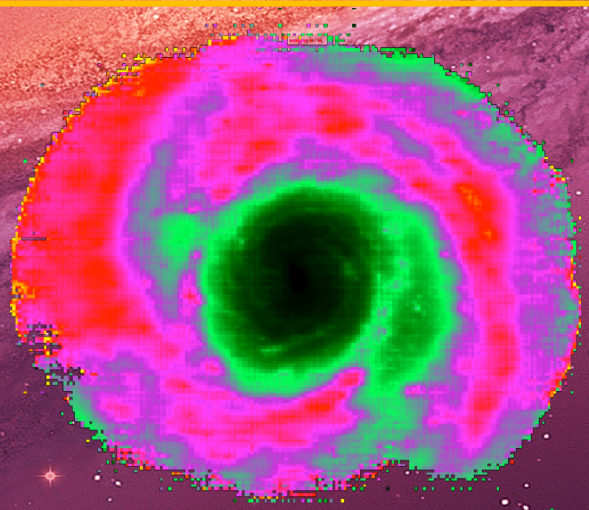
BEST MODEL NORMALIZATION

DUST HEATING CONTRIBUTIONS

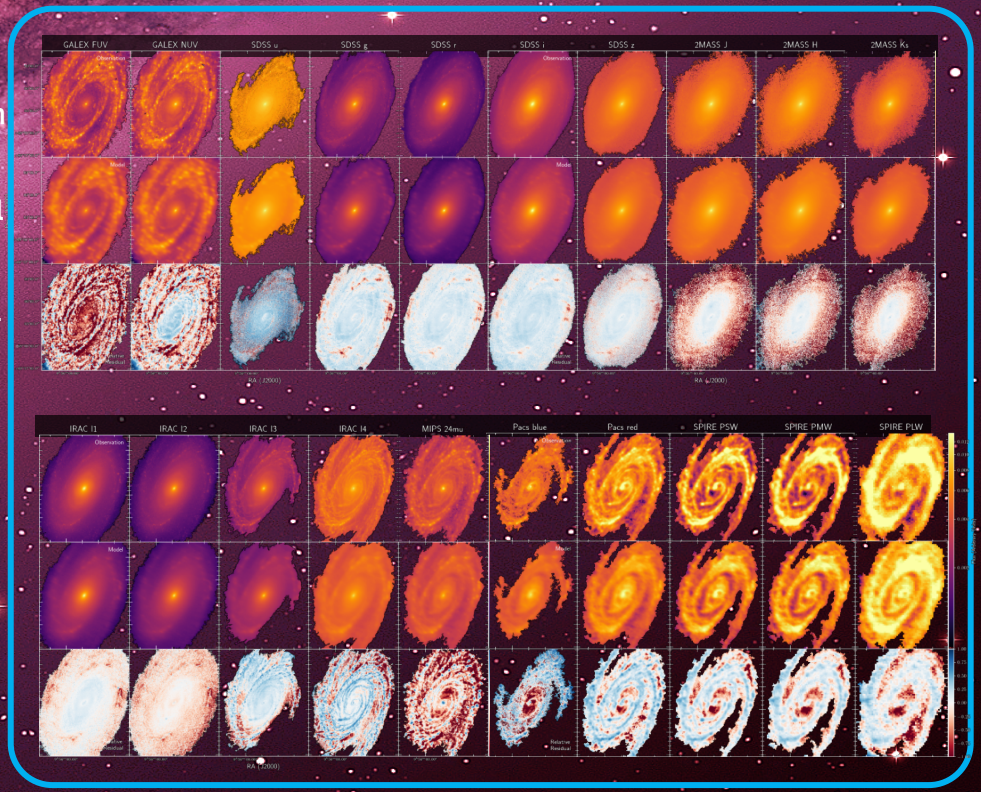
Heating fraction by unevolved stars (young + ionizing)



46% of the dust (mass) is heated by unevolved (young stars and star formation).



Observation
Model
Residual



Observation
Model
Residual