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Herschel-PACS observation of gas lines from the disc around HD141569A

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B9.5V star, 5 Myrs, d=108pc

M₉ dust (disc) ~ 2.6 x 10⁻⁶ M_Sun
M_gas (disc) ~ 2.5 x 10⁻⁴ M_Sun
M_PAH (disc) ~ 1.8 x 10⁻¹² M_Sun

Inner disc: 5-110 AU
Outer disc: 185-500 AU

Disc continuum modelling with MCFOST

• Fit to the SED + PAH features with MCFOST (Pinte et al. 2006)
• PAH + dust opacities treated simultaneously
• PAH treatment: Draine & Li

Gas chemistry and line transfer modelling with ProDiMo

• From the PAH image, the inner disc extends to at least 110 AU.
• All models with gas-to-dust mass ratio from 10 to 100 overpredict the [OI] 63 micron flux. The oxygen chemistry may need to be revised.
• A model with gas-to-dust mass ratio of 100 is consistent with all the other gas constraints.
• Disc models with low opening angles (H/r) are favored due to the sensitivity of the [CI] and CO 3-2 flux on the gas density (flat discs are denser).

Reference:
HD 141569A was observed by Herschel as part of the Gas in Protoplanetary Discs Survey (Dent et al. 2013).

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Please contact me for more details. I am also looking for a tenure/tenure-track position.