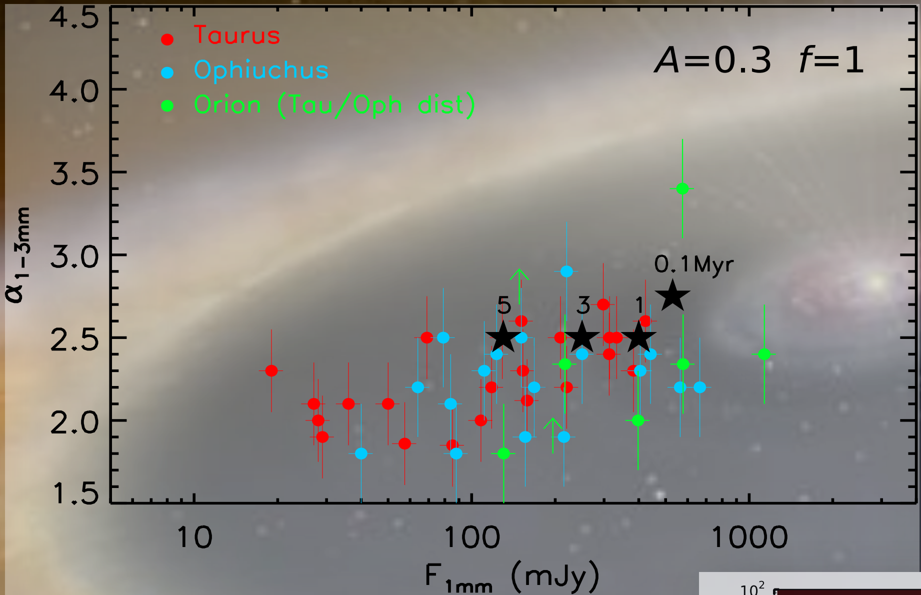
Poster Blitz #5

1. Pinilla, P.
2. Pinte, C.
3. Podio, L.
4. Ros, K.
5. Stamatellos, D.
6. Thi, W.-F. (3 posters)
7. van der Marel, N.
8. Ardila, D.
9. Bonsor, A.

Trapping Dust Particles in Protoplanetary Disks

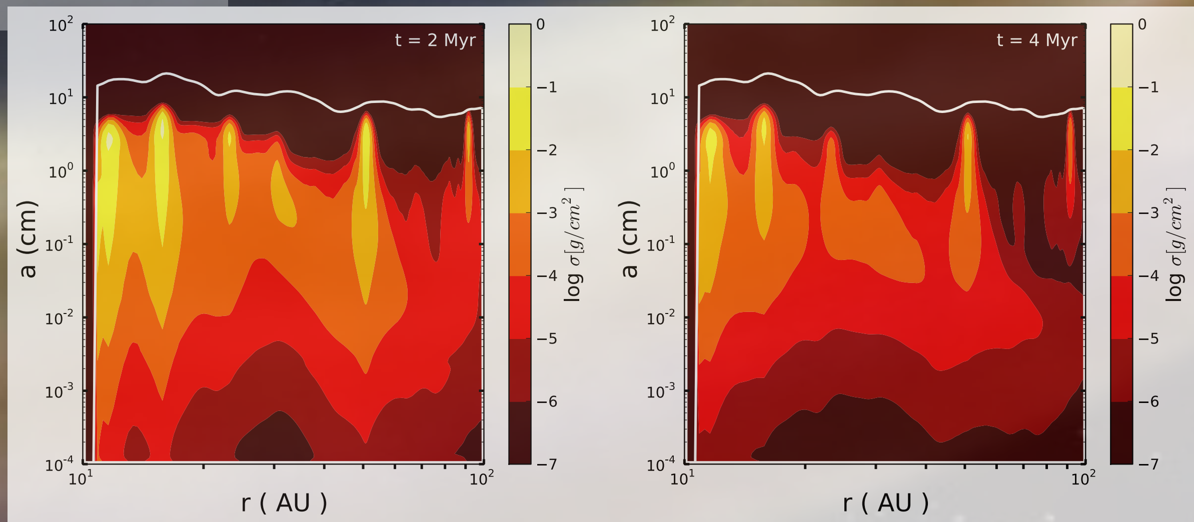


How to...

- Overcome the ***Meter size barrier?***
  - ***Explain mm-observations?***

Particle Trapping by pressure bumps predicted by MRI simulations *(right panel)*

Comparison with mm-observations of star forming regions *(top-panel)*

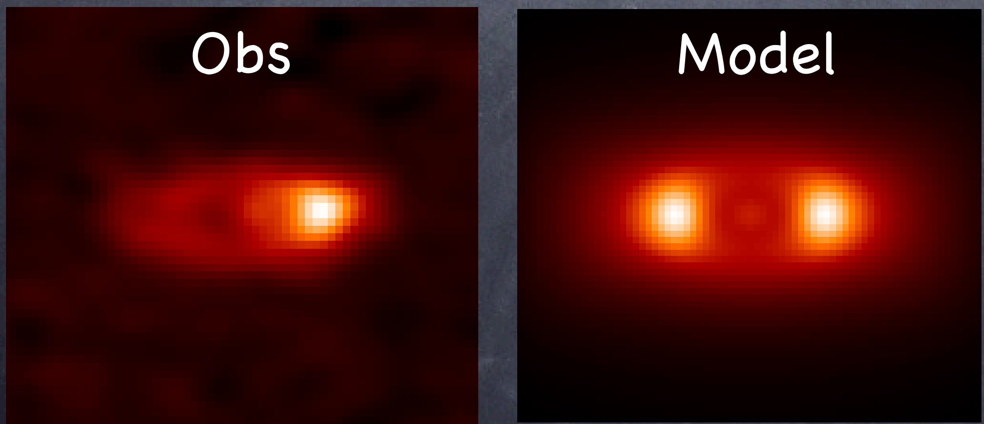


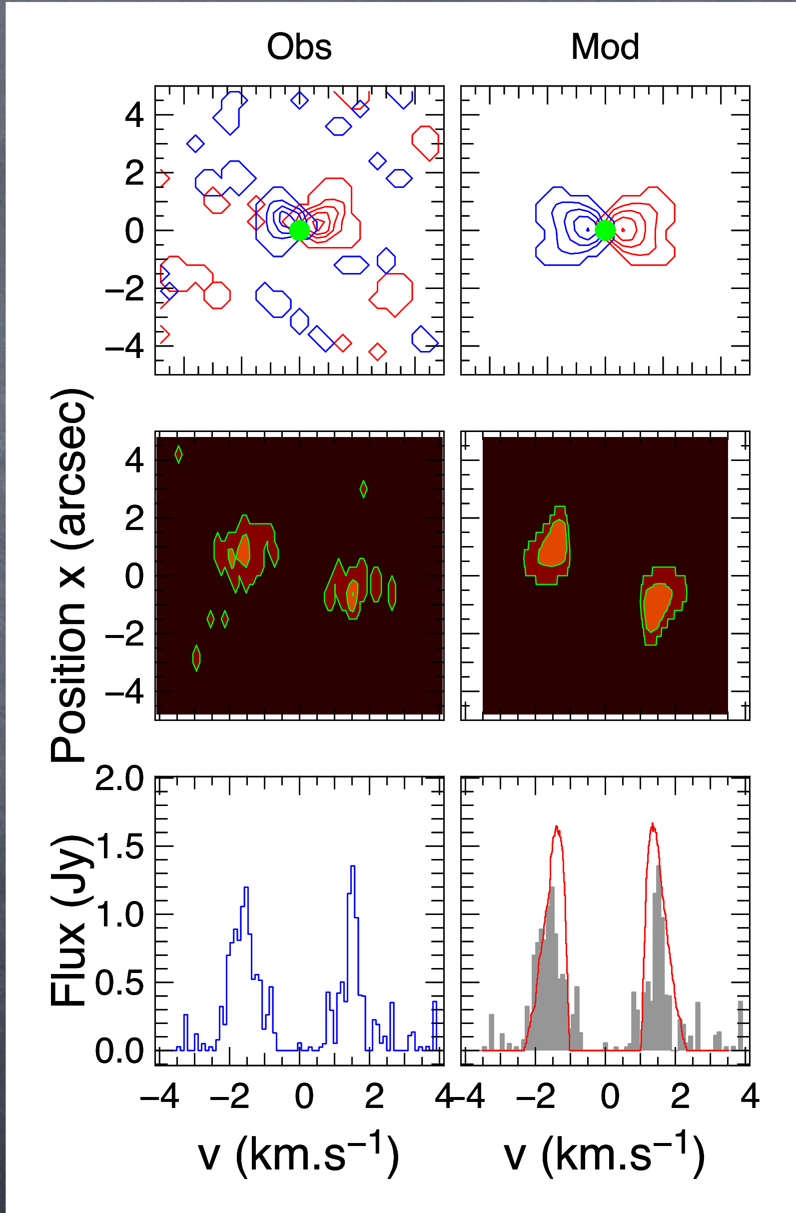
Combining dust & gas diagnostics

C. Pinte, F. Ménard, WF. Thi, G. Duchêne for the GASPS team

IRAS 04158+2805

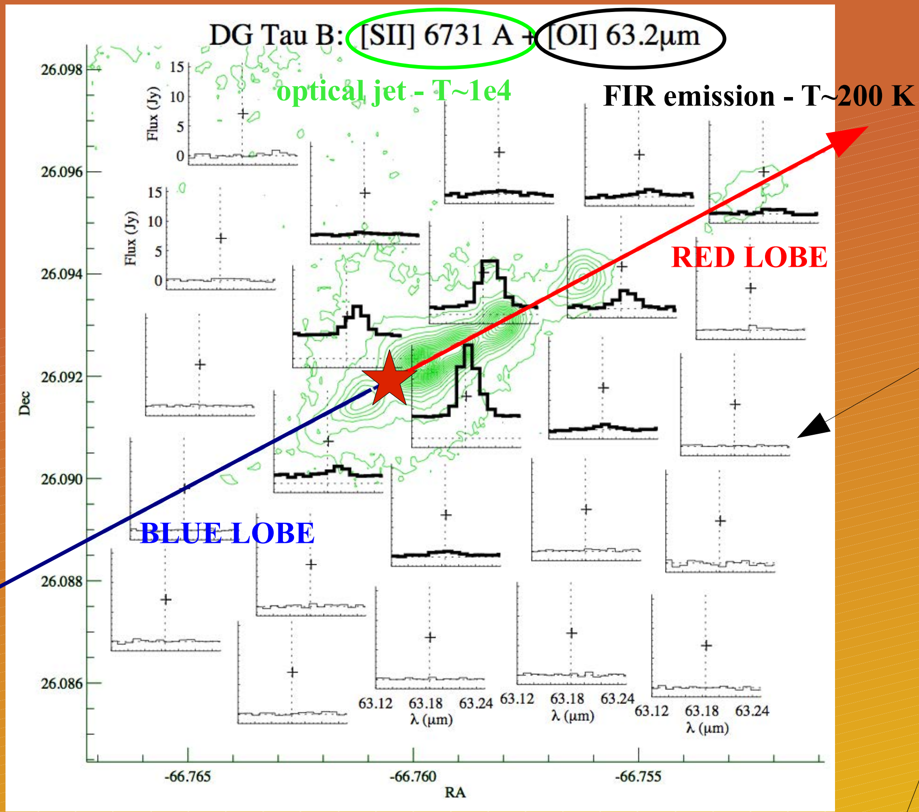
- Cavity seen in the dust phase (850μm)
- CO J=2-1 coming from the cavity
- **MCFOST + ProDiMo modelling**





Herschel/PACS observations of young sources in Taurus: the FIR counterpart of optical jets

L. Podio & the GASPS team (PI: B. Dent)



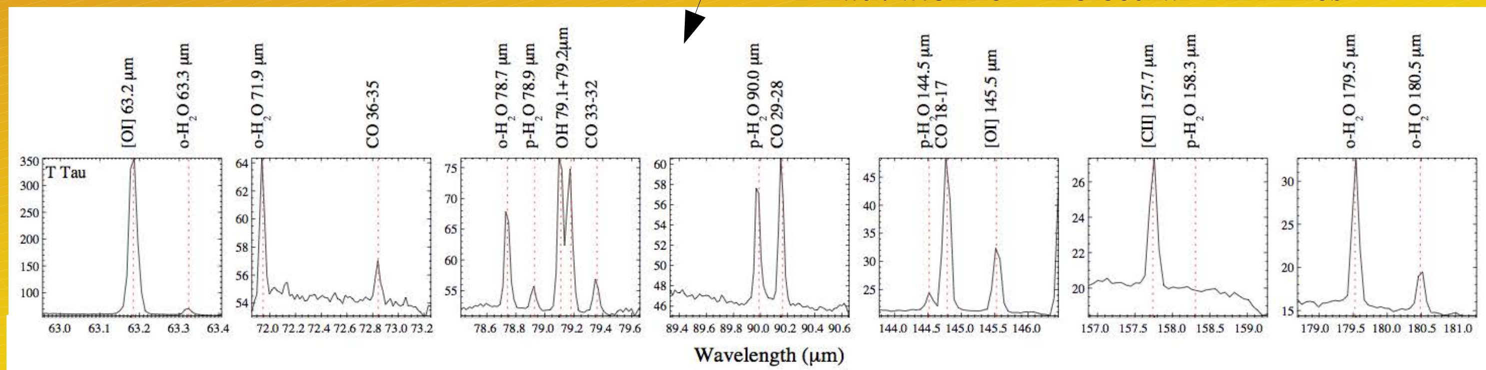
Class I/II jet-sources in Taurus

atomic lines [OI]63 μm, [CII]158 μm
extended along optical jet - J-shock

molecular lines H_2O, high-J CO, OH
compact (<9") - C-shock

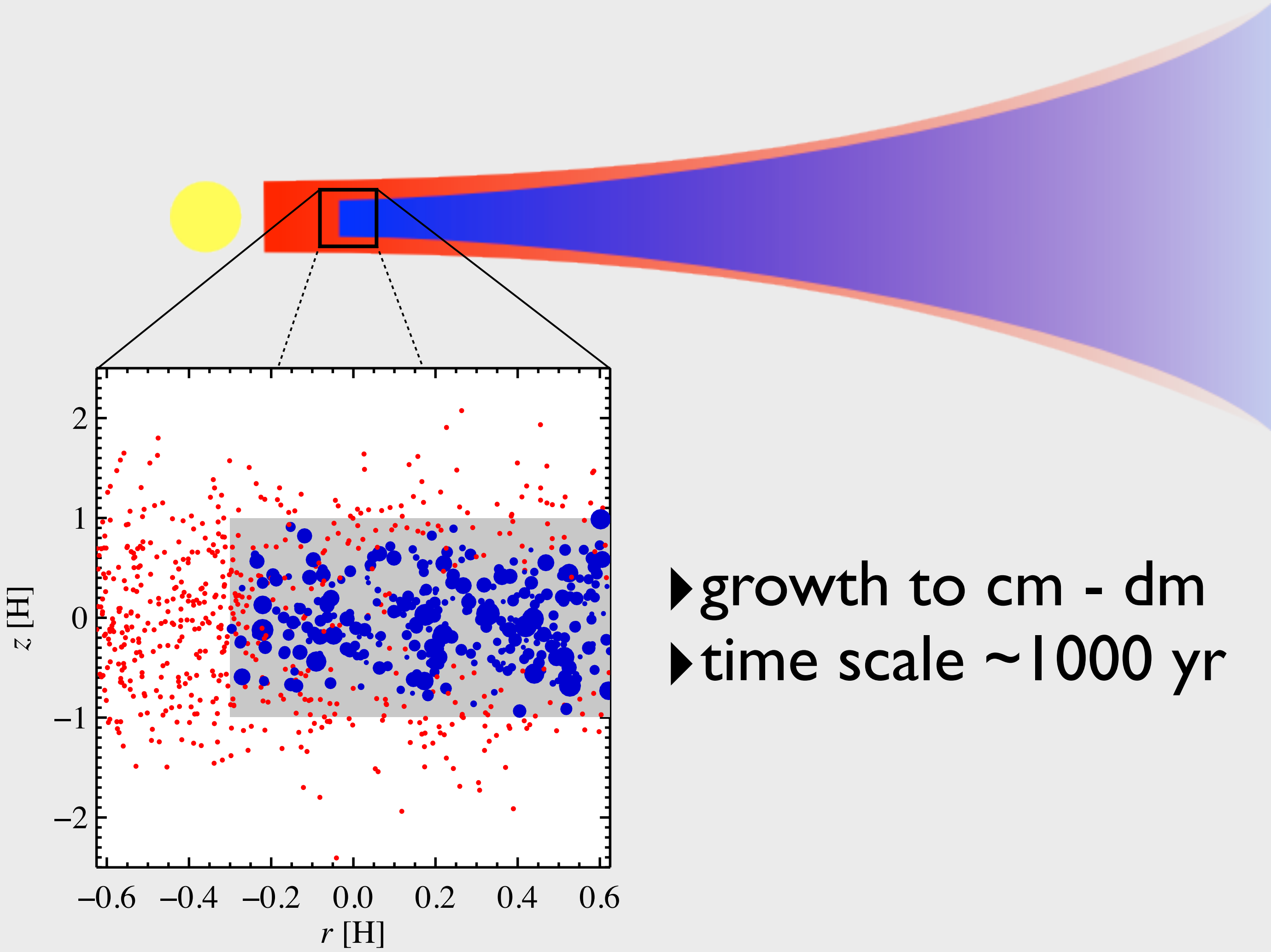
FIR cooling ~ $10^{-3} - 10^{-4}\ L_\odot$
$M_{jet} \sim 10^{-7} - 10^{-8}\ M_\odot$ / yr
evolutionary trend from Class 0 to Class I/II

T Tau: atomic + molecular FIR lines



Ice condensation as a planet formation mechanism

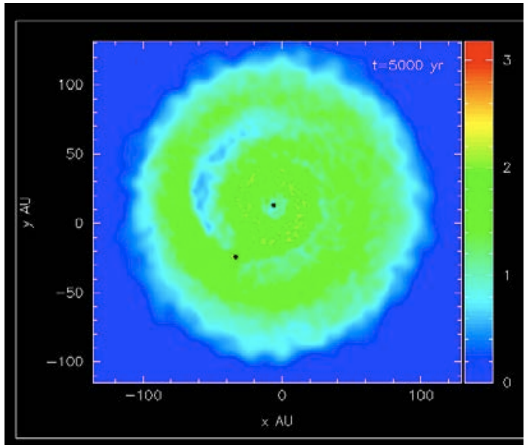
Katrin Ros and Anders Johansen - Lund Observatory



- growth to cm - dm
- time scale ~1000 yr

Can giant planets form by gravitational fragmentation of protostellar discs?

Dimitris Stamatellos, Cardiff University

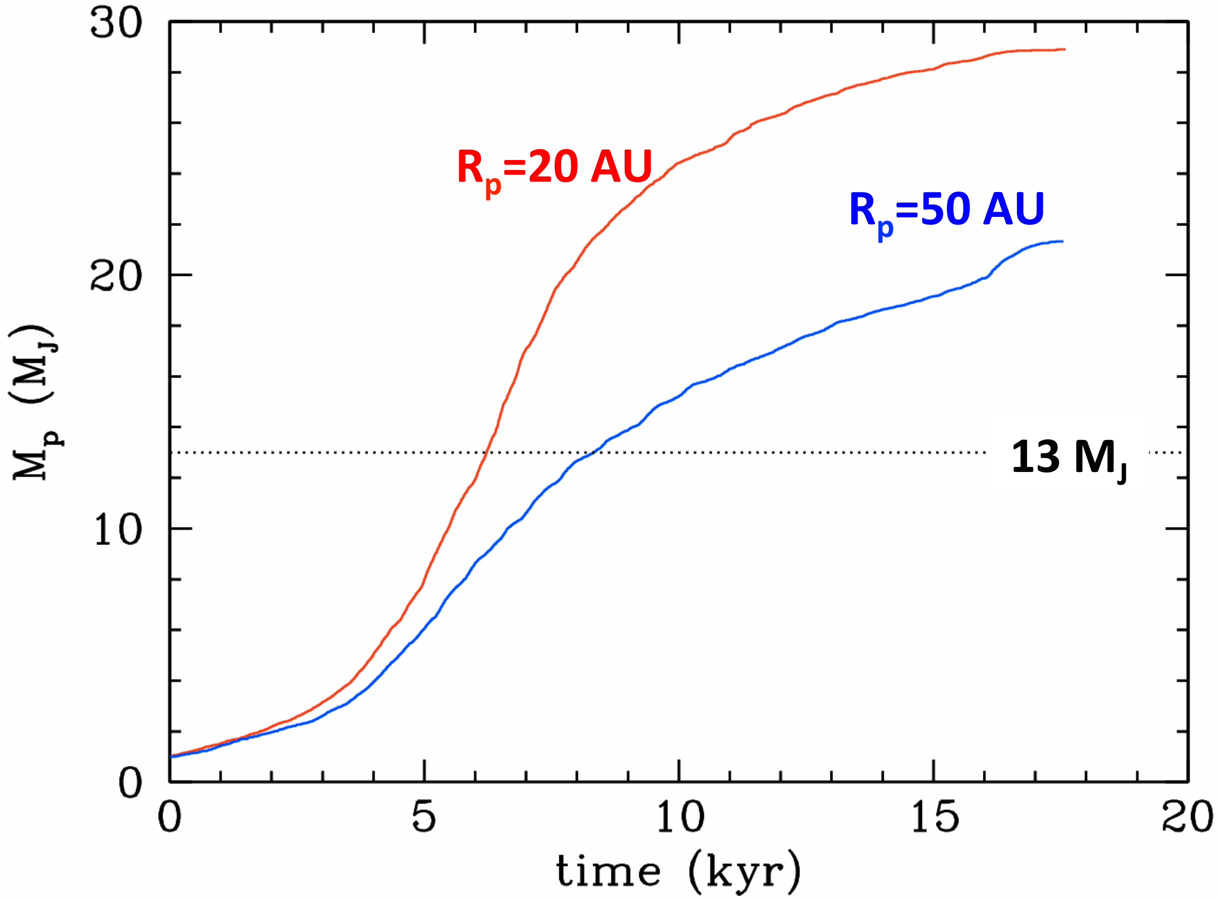


$M_\star$=1$M_\odot$

M_{disc}=0.1$M_\odot$

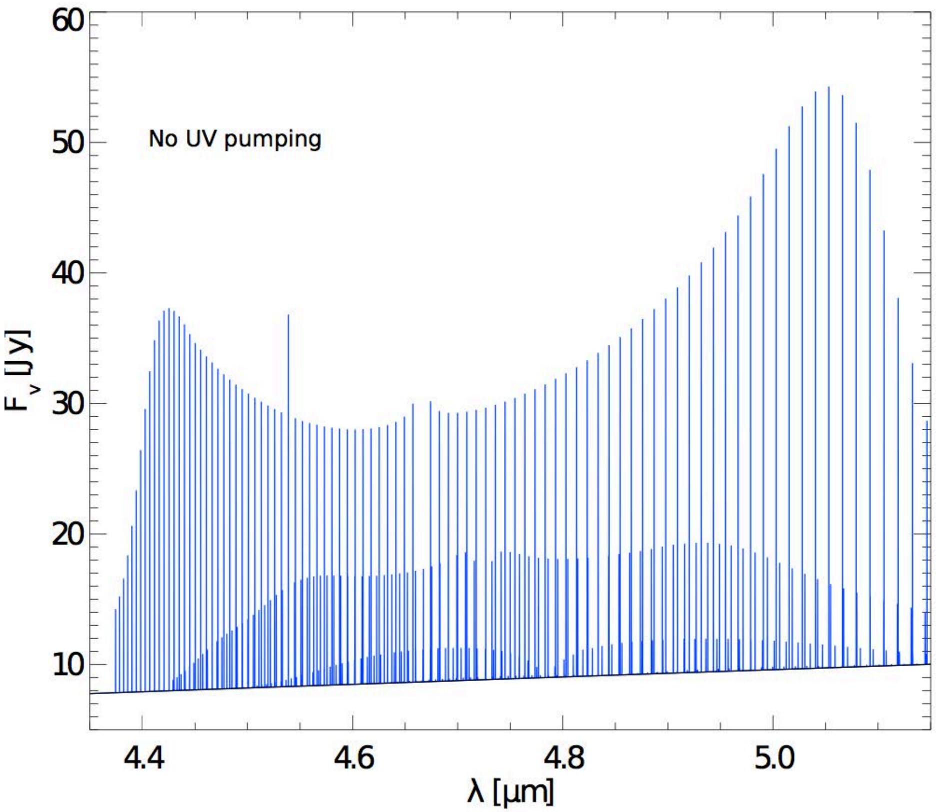
M_p=1M_J

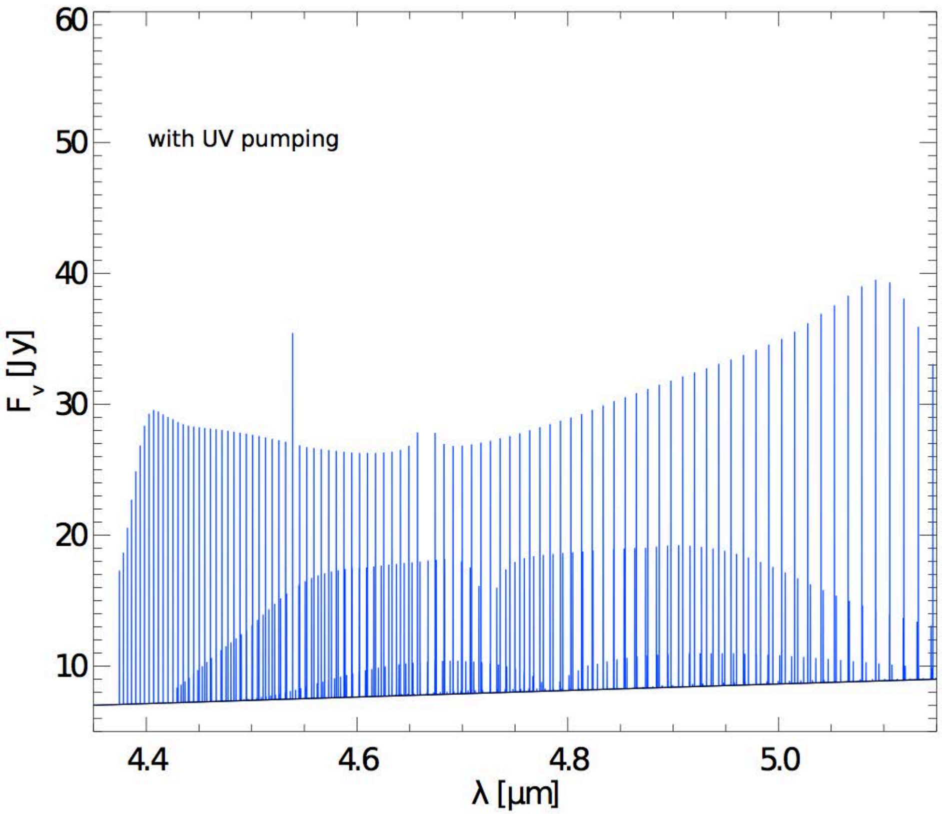
R_p=20 AU, 50 AU



CO ro-vibrational emission in protoplanetary disks: effects of UV and IR pumping

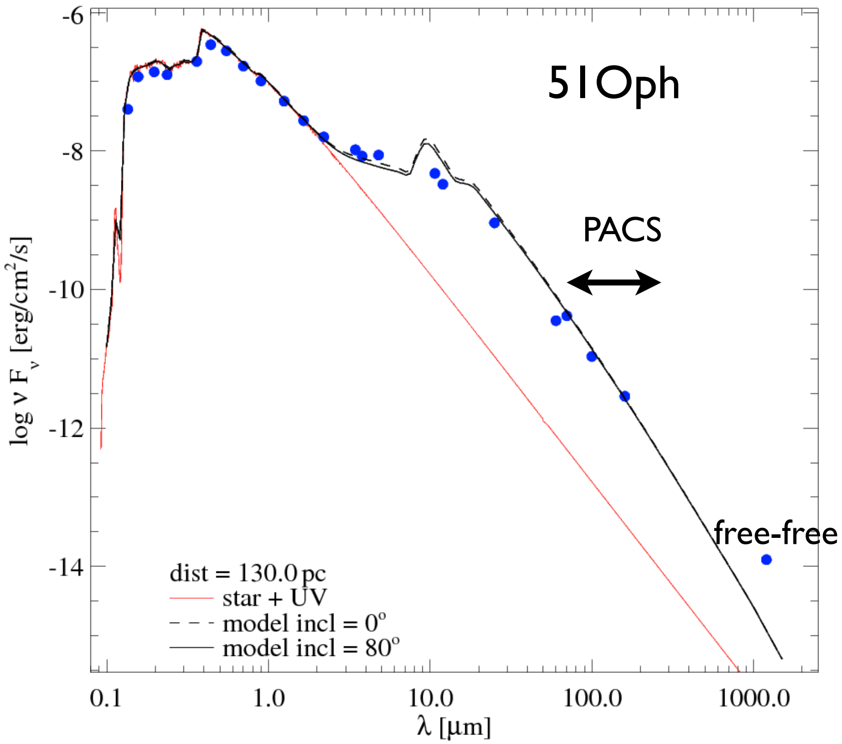
Wing-Fai Thi, IPAG

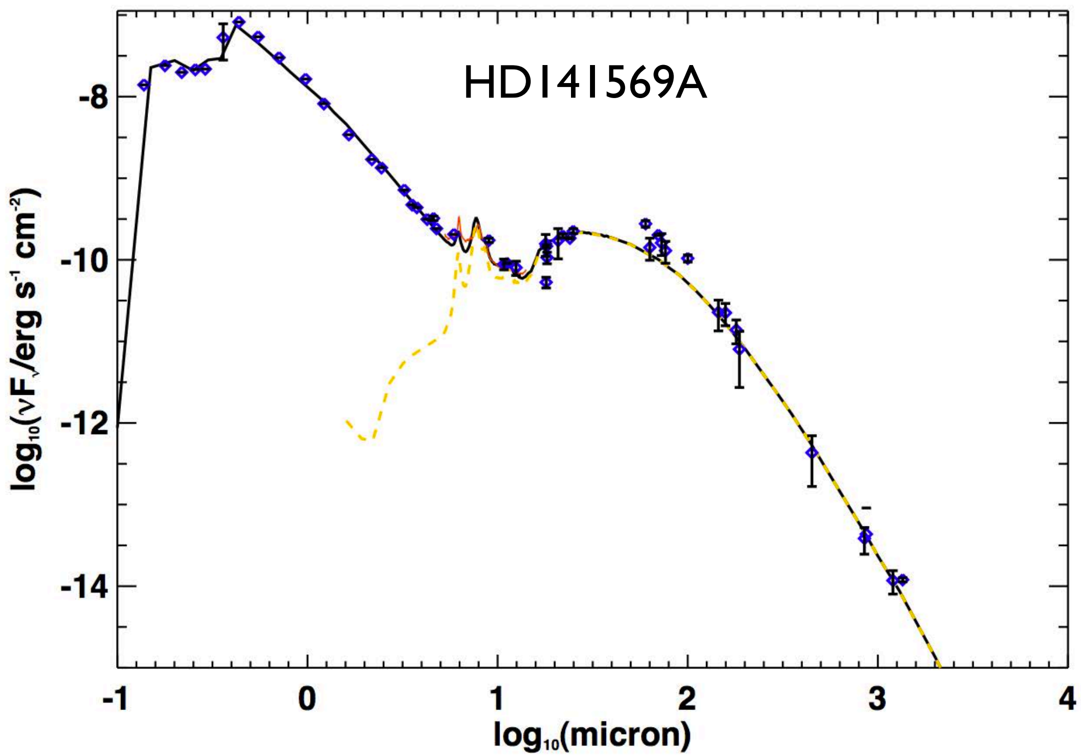




51Oph & HD 141569A: modelling 2 transition disks from the Herschel-GASPS sample

What are the disk solid and gas masses?





- Compact low-mass dust disk

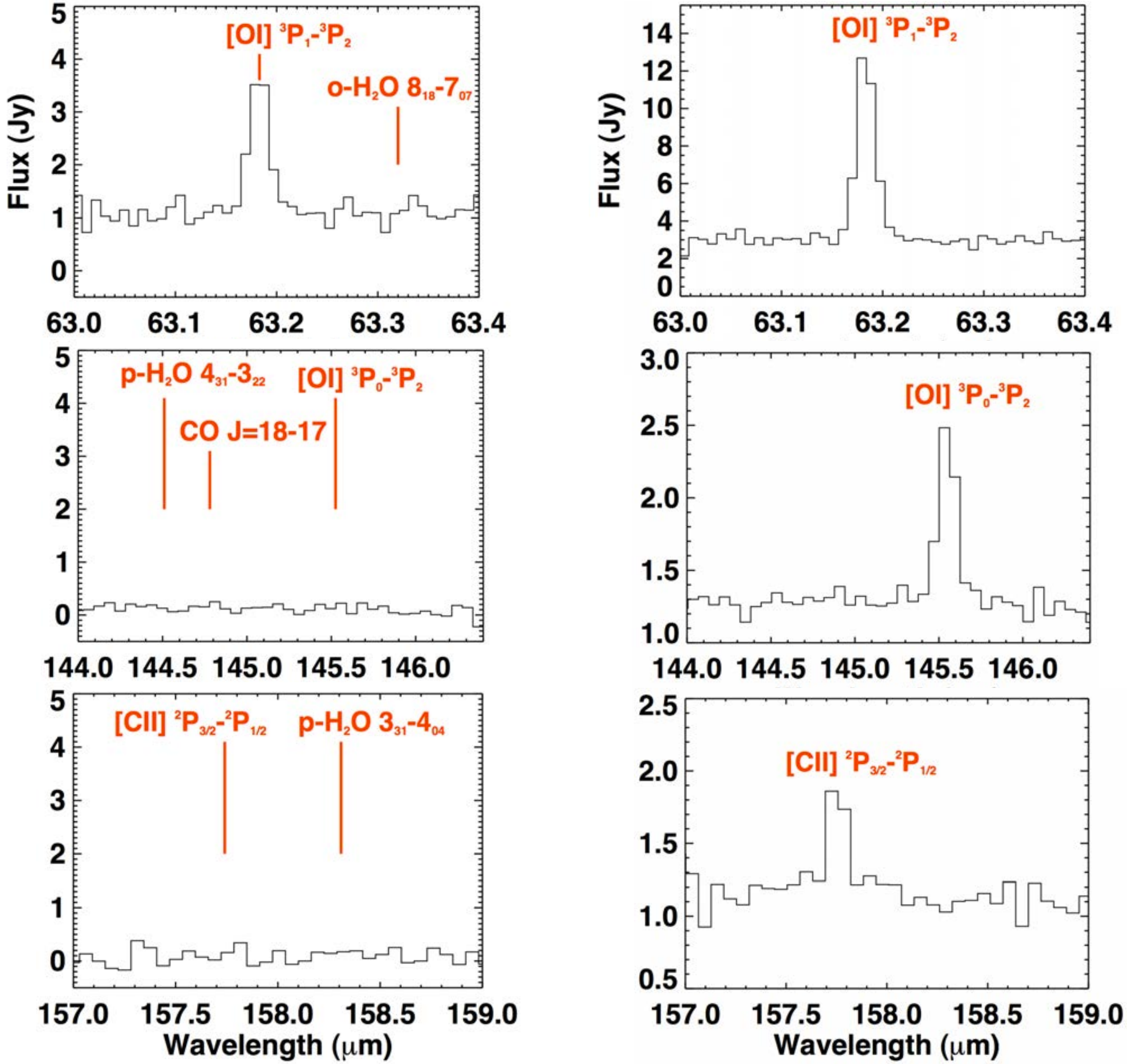
- Disk structure compatible with images
- Fit to the photometry and PAH features

51Oph & HD 141569A: Fine-structure line detections with Herschel-PACS

We modelled the gas lines to constrain the disc gas mass

51Oph

HD141569A

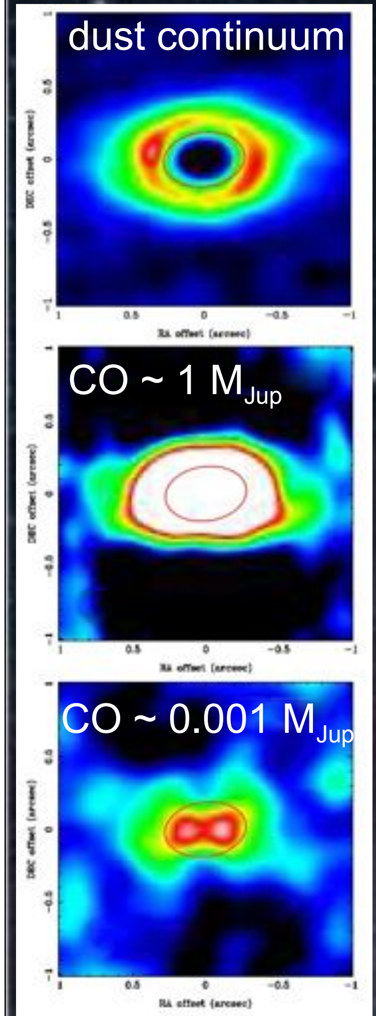


d=130 pc

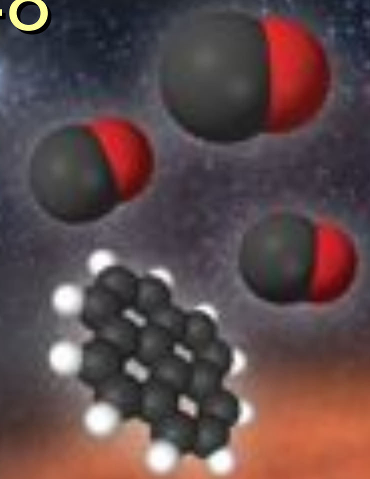
d=108 pc

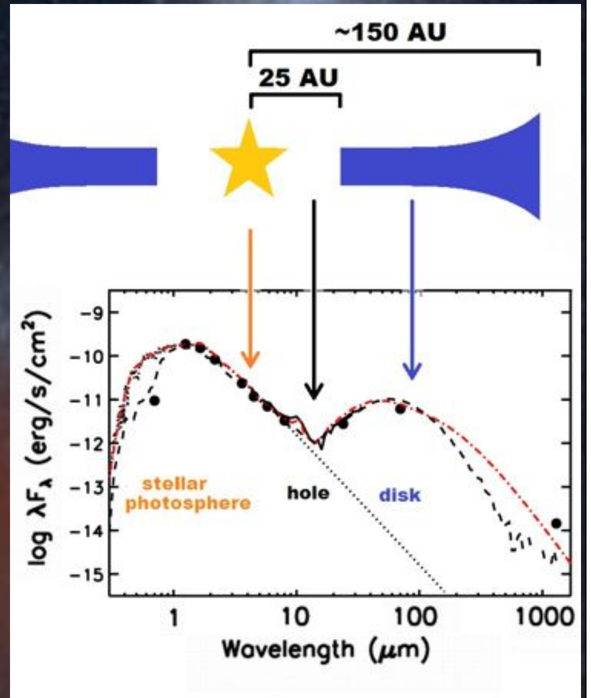
Do dust holes in transitional disks still contain cold gas?

simulation



ALMA Early Science Band 9: Oph-IRS 48



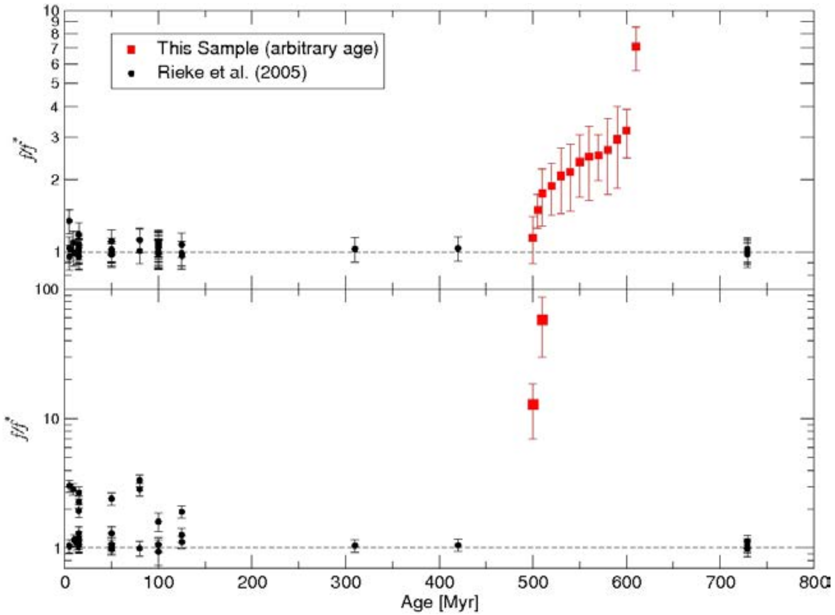


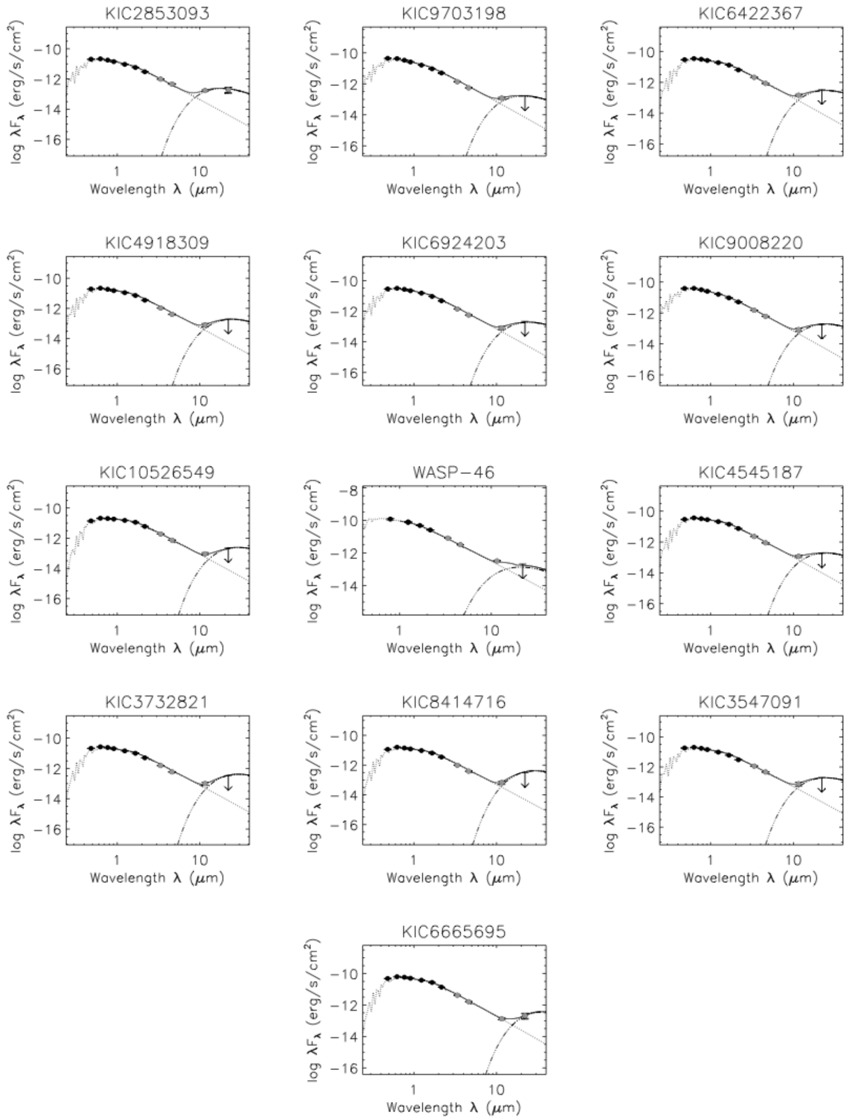
Nienke van der Marel

Leiden Observatory

Warm debris disks in transiting planetary systems: David Ardila (NHSC), Bruno Merín (HSC), Alvaro Ribas (HSC), Hervé Bouy (CAB)

- WISE+Kepler+Transits: 546 matches.
- WISE: 3.4, 4.6, 12, and 22 mic
- 13 Objects with warm excesses (>150 K). Big excesses for their age!
- Accepted paper in astro-ph: Ribas et al. 2012.





EXOZODI

Amy Bonsor, IPAG, CNRS

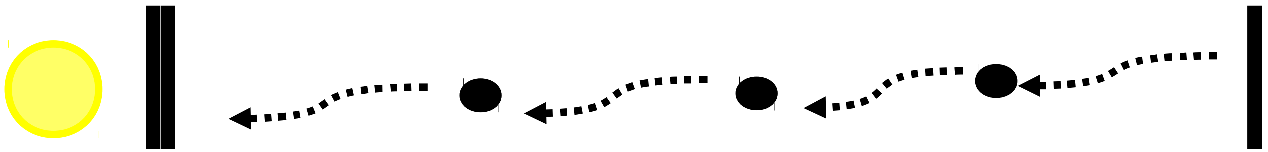
Can observations of exozodical dust at R<1AU be explained by a link with outer planetesimal belts?

Hypothesis : As yet undetected planets that orbit inside of the outer belt scatter comet-like bodies inwards

Test : N-body simulations

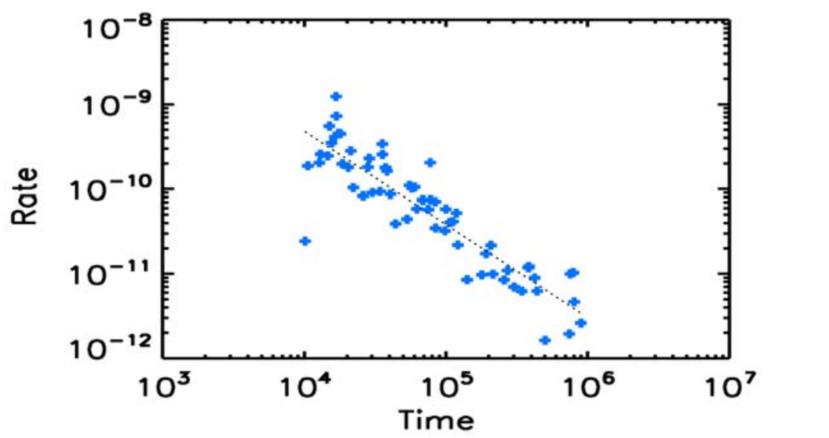
Conclusions : Come and see my poster !

Outer planetesimal belt



Planets and scattering ?

Exozodi



Is sufficient material scattered inwards as an aftermath of planet formation or are such observations only possible in the direct aftermath of a dynamical instability ?

Thank you!