Draft version June 15, 2018
Typeset using LaTeX default style in AASTeX62

Small scale features in the HD163296 planet forming disk revealed by ALMA

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(Revised June 15, 2018)

ABSTRACT

1. INTRODUCTION

2. DATA

- Data acquisition and calibration (do we need this in each paper or could we just refer to Sean's uber paper?)

3. RESULTS

- show image of the continuum in band 6, both in cartesian and polar coordinates
- show azimuthally averaged radial intensity profile
- discuss the general properties of the image
- highlight the new features: tail, inner gap, innermost asymmetry
- (optional) show and discuss CO channel maps

4. DISCUSSION

4.1. *Continuum emission*

- Fitting the azimuthally averaged intensity profile (perhaps excluding the region with the asymmetry) to infer the shape of the gaps (Check overlap with Jane's paper).
- Discuss the azimuthal asymmetry
- Connect with Zhauhuan's simulations of planet disk-interaction
- Discuss upper limits for the detection of circumplanetary disks within the gaps and outside the gap (e.g. at the position of the putative planet proposed by Pinte et al.)
- Discuss the new results in the context of Isella et al. 2016, Liu et al. 2018, Tiegue et al. 2018, Pinte et al. 2018.

4.2. *(Optional) CO emission*

Discuss 12CO channel maps. A full modeling of CO is beyond the scope of this paper. We could instead focus on some features:

1. do we confirm Pinte et al. kink in the CO emission?
2. do we see deviations from Keplerian rotation?

5. CONCLUSION

REFERENCES

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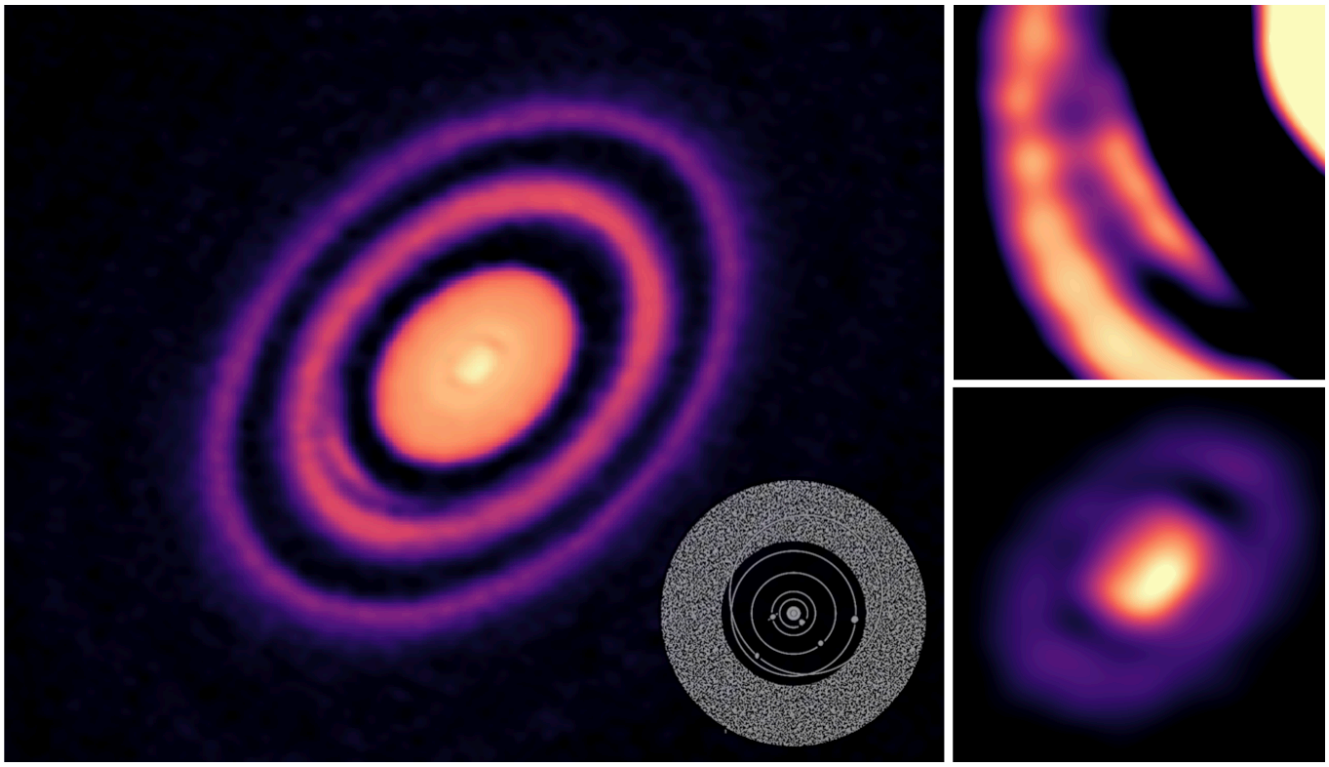

Figure 1.

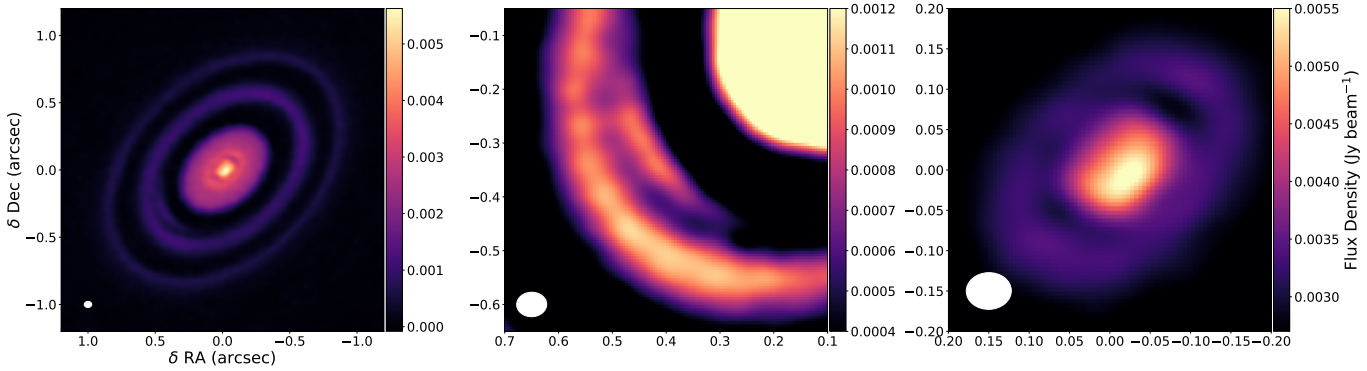

Figure 2. Map of the 1.3 mm dust continuum emission. The beam FWHM is $0.45'' \times 0.55''$. Color scale is linear.

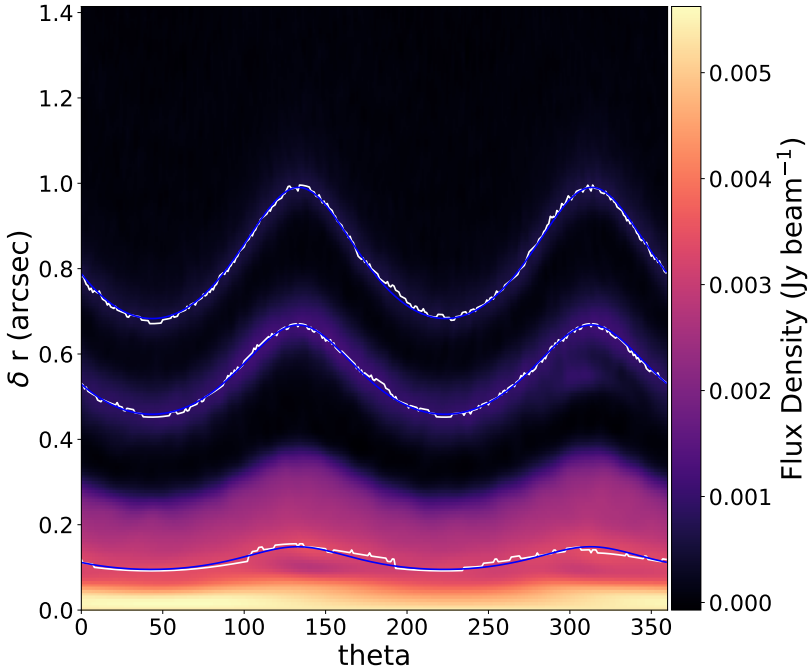

Figure 3. Map of the 1.3 mm dust continuum emission in polar coordinates. White lines indicate the crests of the emission. Blue lines indicate the elliptical fits to the crests (see table 1)

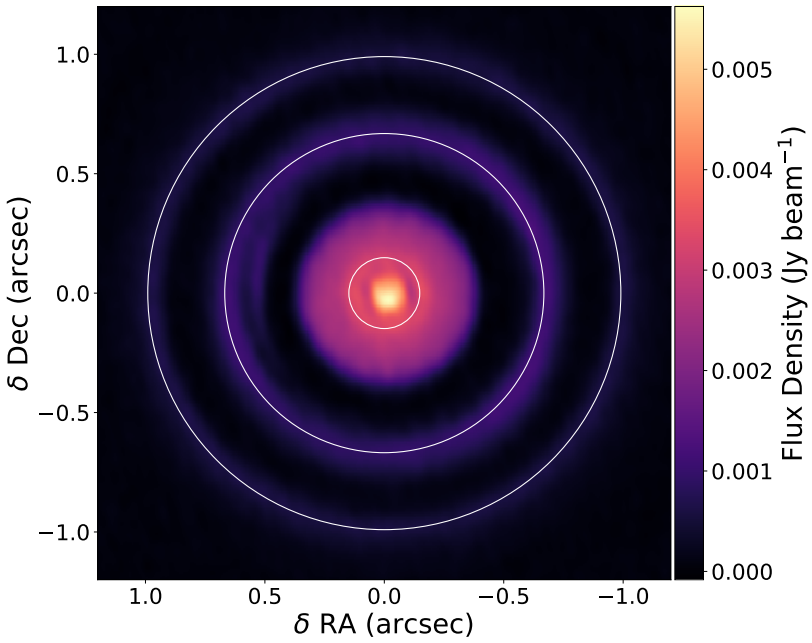

Figure 4. Map of the 1.3 mm dust continuum emission deprojected adopting a disk inclination of 46.5° and a position angle of 133.3°. The white lines show the deprojected elliptical fit to the crests of the emission

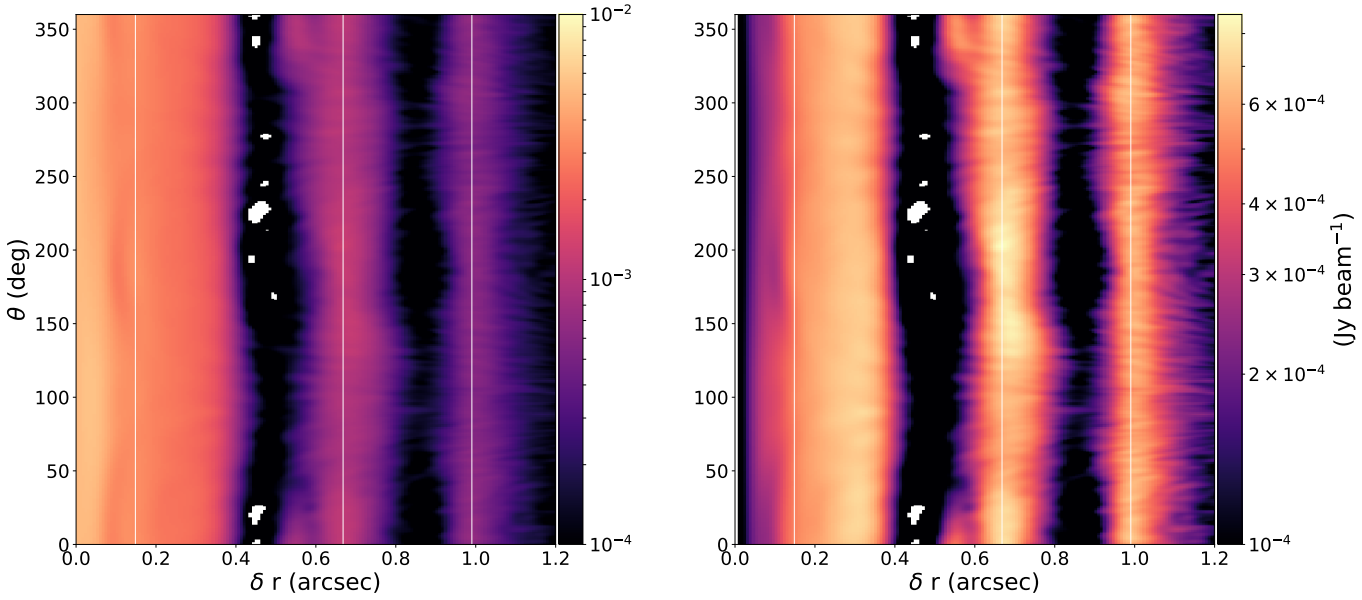

Figure 5. Polar map of the deprojected emission shown in the previous figure. The left panel shows the flux density while the right panel show the flux density multiplied by $\delta(r)$. The color scale is logarithmic in both panels. The white vertical lines show the position of the rings.

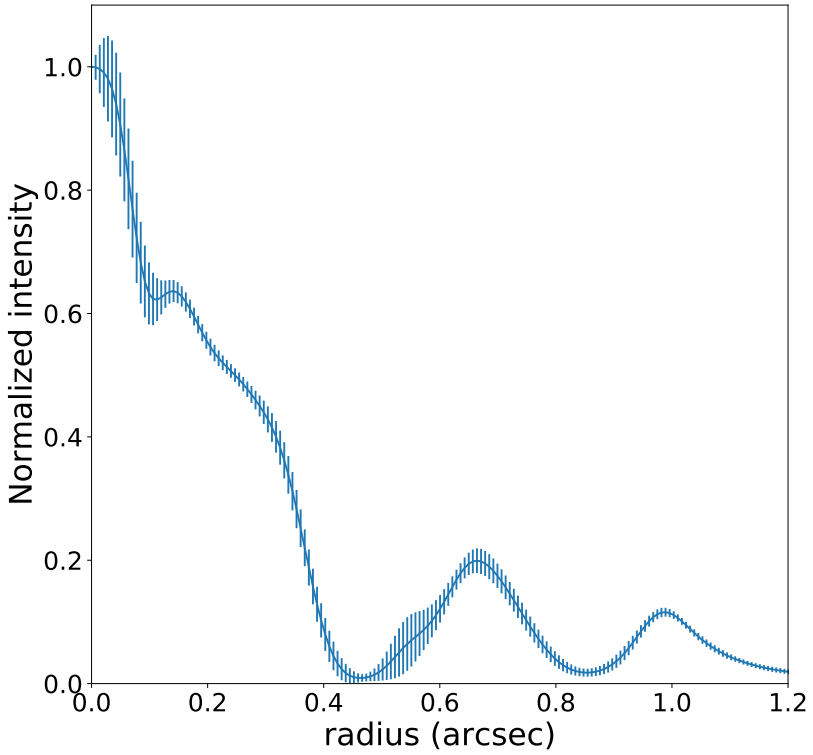

Figure 6. Mean radial profile of the dust emission, $\bar{I}(r)$, extracted from the deprojected map shown in the previous figures. Error bars show the standard deviation calculated by assuming that the flux measurements along the azimuthal direction are independent. This is not correct.

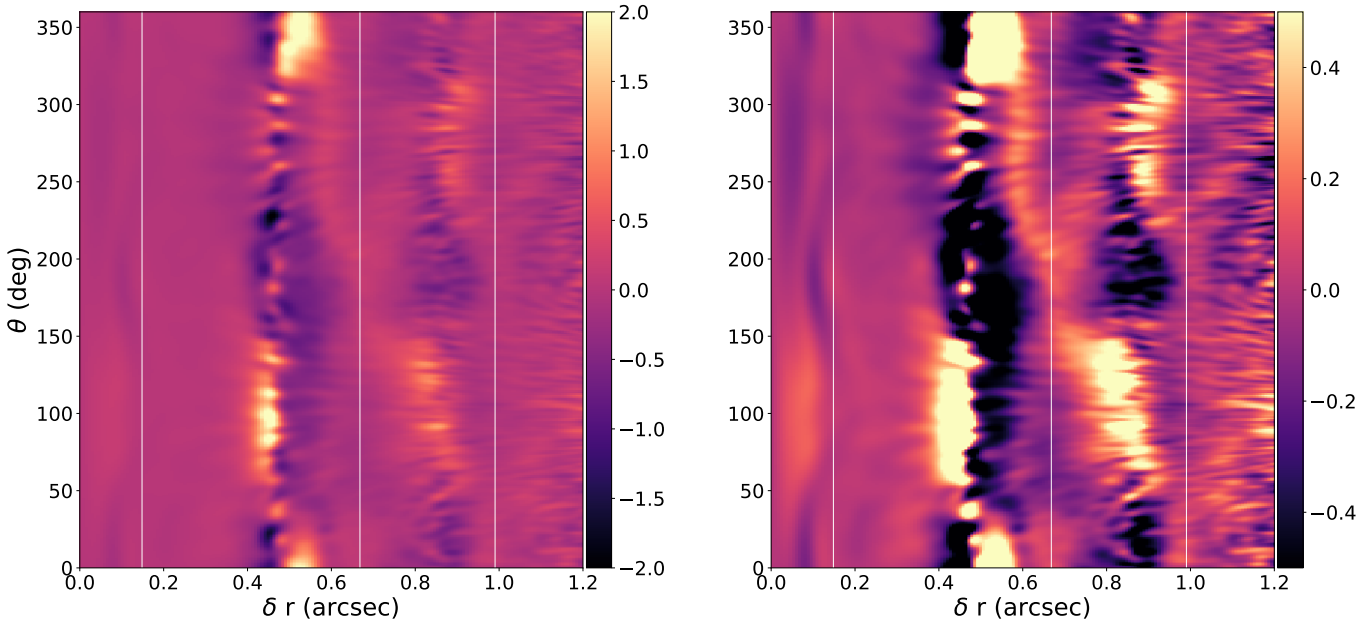

Figure 7. Relative deviation from the mean. The color scale show $(I(r,\theta) - \bar{I}(r))/\bar{I}(r)$