



Universiteit
Leiden
The Netherlands

The puzzle of protoplanetary disk masses

Miotello, A.

Citation

Miotello, A. (2018, March 7). *The puzzle of protoplanetary disk masses*. Retrieved from <https://hdl.handle.net/1887/61006>

Version: Not Applicable (or Unknown)

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/61006>

Note: To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden



The following handle holds various files of this Leiden University dissertation:

<http://hdl.handle.net/1887/61006>

Author: Miotello, A.

Title: The puzzle of protoplanetary disk masses

Issue Date: 2018-03-07

Propositions accompanying the thesis

The puzzle of protoplanetary disk masses

- i. CO isotope-selective photodissociation needs to be properly considered in disk modeling to infer accurate gas masses. (*Chapter 2*)
- ii. Disk gas masses can be inferred by a combination of ^{13}CO and C^{18}O total intensities, although with some uncertainties. (*Chapter 3*)
- iii. Fast chemical evolution rather than low gas-to-dust ratios is likely the cause of the low CO-based disk gas masses in Lupus. (*Chapter 4*)
- iv. The slope of the surface density distribution can be traced by low- J ^{13}CO line emission, but only in specific disk regions. (*Chapter 5*)
- v. HD far-infrared emission lines from disks should be considered as an important science goal for future far-infrared missions.
- vi. The existence of Jupiter and its particular orbit make that the Solar System is not a typical case compared with observed exoplanetary system architectures.
(Morbidelli & Raymond 2016, *Geophys. Res.*, 121, 1962)
- vii. Running models teaches you that extraordinary claims require extraordinary causes, as well as an extraordinary high number of checks.
- viii. Studying CO isotopologues is often considered as complicated chemistry by astronomers, but it does not even fall under “chemistry” for astrochemists.
- ix. Finding the unexpected in a dataset can be as exciting as finding the confirmation of what was expected.
- x. In life, as in science, an error can be an opportunity to learn something new.
- xi. Combining motherhood with a PhD is often seen as a heroic act: this demonstrates that not enough has yet been done for true inclusion of women in science.
- xii. All astronomers should stare at the sky on a new moon night in Paranal at least once in their lifetime. This brings back the original astonishment in front of the beautiful unknown and provides renewed motivation to study a single detail as part of the bigger picture.

Anna Miotello
Leiden, March 7th 2018