

Exploring the Transition Disk Population with a public facing database

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INTRODUCTION

Transition disks are a loosely defined category of circumstellar disks that exist as an evolutionary step between protoplanetary and debris disks. Unlike protoplanetary disks, they are expected to host forming exoplanets, and therefore have complex and varied morphology. Until recently, they have largely been studied in isolation, reported on individually.



RESULTS

- Searchable, exportable** table listing transition disk properties.
- Published resolved images of the sampled disks were added to a **sortable gallery**

FUTURE GOALS

1. Expand the list of properties to **include planet candidates**
2. Obtain published .fits files from researchers to **visualize wavelength dependent morphology to scale**
3. Analyze the population and develop **summary statistics**

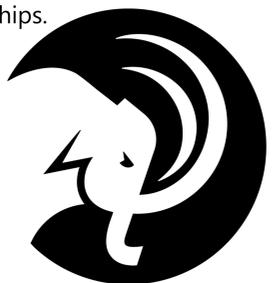
Please contact us if you have feedback or would like to submit images.

Acknowledgements

We acknowledge the Nonotuck land our home institutions occupy, the Nonotuck ancestors, and their descendants. While land acknowledgements do no repair the injustices of the past, we hope that increased awareness will motivate such reparations. For more information please visit <https://tinyurl.com/5col-land>.

Thanks also to the Gregory S. Call fund for undergraduate research and the SURF and FCAD fellowships.

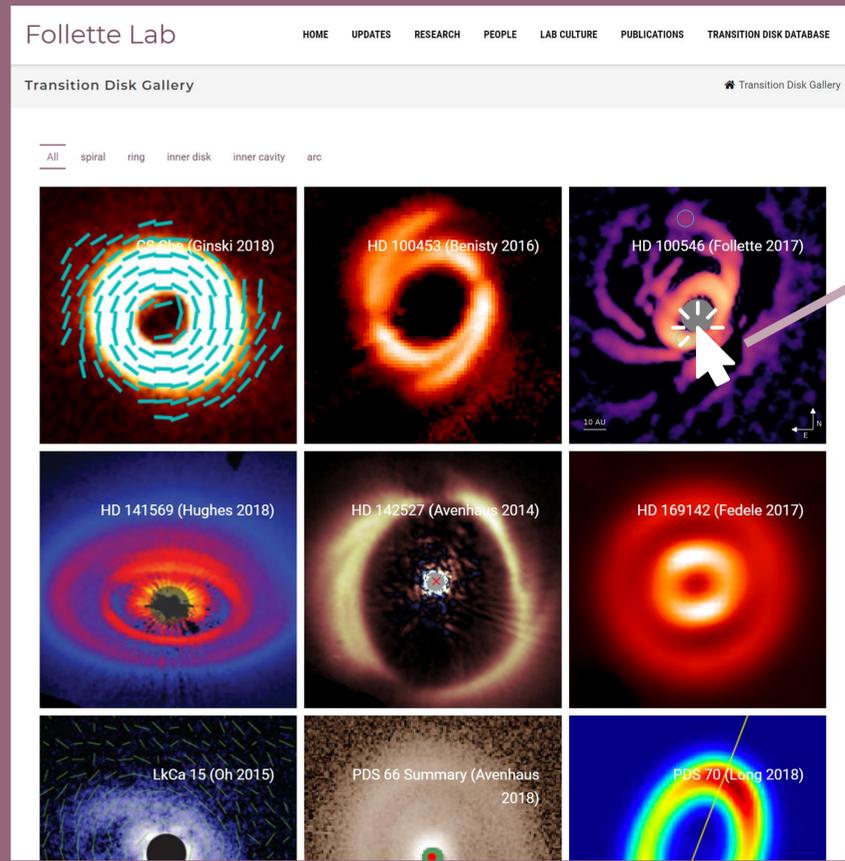
Special thanks to Dr. Follette, Dr. Ward-Duong and the rest of our peers in the Follette Lab at Amherst College for their support and advice.



We built an **online, public** database of resolved, published **transition disks.**

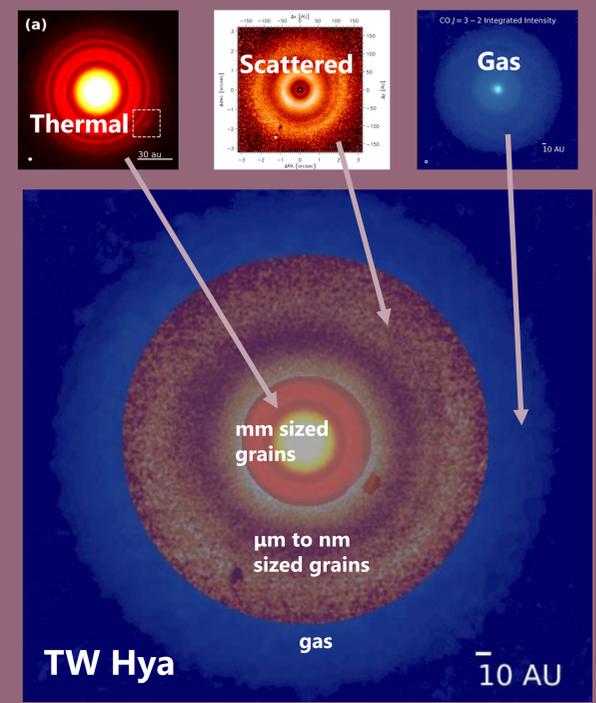


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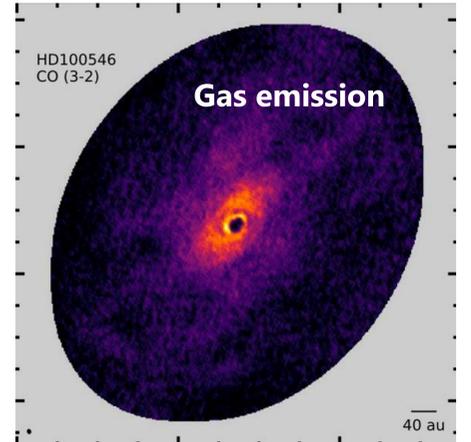
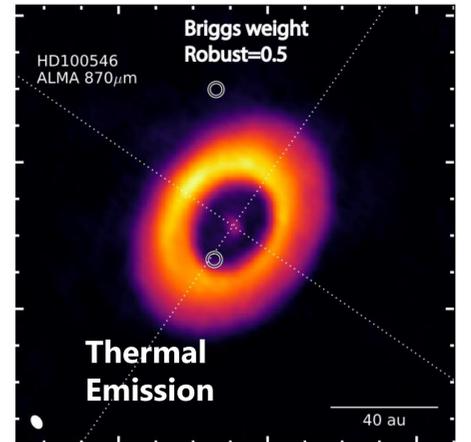
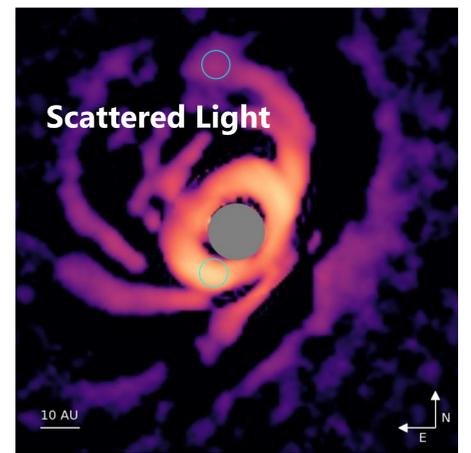


Click a gallery image to visit the disk's object page

To facilitate comparison, we hope to create composite images that show disk structure across large dust grains, small dust grains, and gas, to scale (schematic example below, images credit: Tsukagoshi et al. 2019, vanBoekel et al. 2017, Huang et al. 2018).



The website hosts a searchable table with compiled information on each disk. The gallery (above) displays resolved transition disk images that can be sorted by morphology. Clicking on a given disk's gallery image will direct the user to the disk's object page, which contains resolved images in each of the three wavelength regimes commonly observed.



HD 100546 Database Entry

- 3 Resolved images in each wavelength regime (right: Follette 2017, bottom middle & left: Pineda 2019)
- System/Host properties, including
 - RA, Dec : 11h 33m 25.44s, -70° 11' 41.24" (GAIA DR2)
 - Distance : 110pc (GAIA DR2)
 - Rmag : 6.8 (Ofek 2008)
 - Spectral type : A0Ve (Gray 2017)
 - Age : 15±3 Myr (Pecaut 2016)
 - Association membership and probability : LCC, 98.6% (Banyan Sigma)
- Disk properties across wavelength, including
 - mm gap radius : 0."02-0."19 (Pineda 2019)
 - NIR gap radius : 0."007-0."14 (Follette 2017)
 - Gas outer radius : 3."5 (Miley 2019)
 - Inclination : 42° (Pineda 2019)
 - PA of major axis : 144° (Miley 2019)
 - Log accretion : -6.44 (Mendigutía 2015)