CONTACT INFORMATION	Center for Astrophysics 60 Garden Street MS 78 Cambridge, MA, 02138	(+1) 617-495-7259 https://richteague.github.io richard.d.teague@cfa.harvard.edu	
EMPLOYMENT	Massachusetts Institute of Technology Department of Earth, Atmospheric and Planetary Sciences Assistant Professor	July 2022	
	Center for Astrophysics   Harvard & Smithsonian Submillimeter Array Fellow	Sep. 2019 – June 2022	
	University of Michigan Postdoctoral Researcher	May 2017 – Jul. 2019	
	Max-Planck-Institute for Astronomy Postdoctoral Researcher	Jan. 2017 – Apr. 2017	
Education	Max-Planck-Institute for Astronomy, Heidelberg, Germany Ph.D. in Astronomy (Magna Cum Laude)	Oct. 2013 – Jan. 2017	
	<b>University of Edinburgh</b> , Edinburgh, United Kingdom MPhys Astrophysics (First Class Honours)	Sep. 2008 – May 2013	
Honours & Awards	Harvard Data Science Initiative Research Fund (\$9,700)  Regularized Maximum Likelihood Imaging: A New Method for Detecting Plan	Mar. 2020	
	Ernst Patzer Award  Awarded for the best refereed publication by a young scientist.	Nov. 2016	
	Pre-Honours Certificate of Merit  Awarded for top 5% performance in pre-honours exams.	May 2011	
	Pre-Honours Certificate of Merit	May 2010	
	Awarded for top 5% performance in pre-honours exams.	·	
Publication Summary	17 lead author papers, including one published in <i>Nature</i> , and 66 co-author papers, totaling 1645 citations (ADS). A full publication list can be found at the end of the CV.		
OBSERVATIONAL TIME SUMMARY	I have been awarded over <b>265 hours</b> (335 hours) of time on <b>ALMA</b> as PI (co-I), including as the exoALMA Large Program of which I am PI, <b>20 hours</b> (165 hours) on <b>IRAM</b> telescopes as PI (co-I), <b>16 hours</b> (30 hours) on the <b>SMA</b> as PI (co-I) and <b>8 hours</b> (18 hours) on <b>JWST</b> as co-PI (co-I). I have also been a co-investigator on projects for the <b>VLA</b> , the <b>VLT</b> and the <b>Magellan</b> telescopes, with awards of 50 hours, 25 hour and 2 nights, respectively. A break down of PI proposals can be found at the end of the CV.		
Professional Services	SMA Interferometry School SOC SMA, Hilo, Hawaii, USA	Mar. 2021	
	Advanced Data Analysis Techniques for ALMA SOC NRAO, Charlottesville, Virginia, USA [postponed due to Covid-19]	Oct. 2020	
	SMA Seminar Organizer Departmental Seminar Series	2020 - 2021	
	Visualizing the Kinematics of Planet Formation SOC Flatiron Institute, New York City, USA	Oct. 2019	
	Postdoc and Research Scientist DEI Representative  Department Diversity, Equity and Inclusion Committee Member	2018 – 2019	
	Equi-Tea Organizer  Diversity, Equity and Inclusion Journal Club	2018 – 2019	

	Stars, Planets and Formation Seminar Organizer  Departmental Seminar Series	2018 – 2019
	Conversations on Equity and Inclusion Co-organizer  Joint Physics / Astronomy / Space Sciences DEI Colloquium Series	2018 – 2019
	NESSF External Reviewer	2018, 2020
	Heidelberg MPG Student Workshop Organizer	2016
	PSF Coffee Organizer Departmental Seminar Series	2015 – 2017
	MPIA Student Representative	2015 – 2017
	MPIA Student Workshop Organizer	2015, 2016
	IMPRS Graduate Student Representative	2013 – 2017
	Referee for AAS, A&A, MNRAS and Nature journals	
SUPERVISION	Haochuan Yu Beijing Normal University Undergraduate student.	2020 -
	Alessandra Canta Harvard University Undergraduate student. Co-supervised with Karin Öberg, Harvard	2020 -
	<b>Felipe Alcaron</b> University of Michigan  Graduate student. Co-supervised with Ted Bergin and Ke Zhang, UMich.	2019 – 2020
	<b>Jenny Calahan</b> University of Michigan  Graduate student. Co-supervised with Ted Bergin and Ke Zhang, UMich.	2019 – 2020
	<b>Deryl Long</b> University of Michigan  Undergraduate student. Co-supervised with Ted Bergin and Ke Zhang, UMich.	2019
	Case Hazewinkel University of Michigan Undergraduate student. Co-supervised with Ted Bergin, UMich.	2019
	Jeanne Kwon University of Michigan Undergraduate Research Opportunity Program	2018 – 2019
	Julian Penzinger Ludwig Maximilian University Summer student. Co-supervised with Dmitry Semenov, MPIA.	2016, 2018
TALKS &	Munich Join Astronomical Colloquium	Oct. 2021
SEMINARS	Mapping the Assembly of Planetary Systems in 6 Dimensions	(invited)
	Center for Astrophysics Colloquium	Sep. 2021
	Mapping the Assembly of Planetary Systems in 6 Dimensions	(invited)
	ETH Zurich Exoplanets & Habitability Seminar Witnessing the Assembly of Planetary Systems	May 2021 (invited)
	Cambridge Exoplanet Center Seminar Witnessing the Assembly of Planetary Systems	May 2021 (invited)
	Towards the Comprehensive Characterization of Exoplanets: Science at the Interface of Multiple Measurement Techniques Transforming ALMA into a Planet Hunting Facility	Apr. 2021
	McMaster University Astrophysics Seminar	Apr. 2021
	Witnessing the Assembly of Planetary Systems	(invited)
	Circumplanetary Disks II	Mar. 2021
	Observations and Observational Predictions	(invited)
	Max Planck Research Group Selection Symposium Witnessing the Assembly of Planetary Systems	Feb. 2021 (invited)
	Caltech Dix Planetary Science Department Seminar Planet Formation in Six Dimensions	Feb. 2021 (invited)
	Five Years After HL Tau: A New Era in Planet Formation Observing the Kinematics of Gaseous Substructures	Dec. 2020

Research Unit Transition Disks (RUTD) Conference  Observing the Dynamics of Planet Disk Interactions	Oct. 2020 (invited)
From Clouds to Planets II: The Astrochemical Link	Oct. 2020
ALMA's 3D View of Planet Formation [postponed due to Covid-19]	(invited)
Exoplanets III  Kinematical Detection and Characterizing of Protoplanets with ALMA	July 2020
MPIA Königstuhl Colloquium	July 2020
Visualizing the Assembly of Planetary Systems	(invited)
JPL Astrophysics Colloqium  Witnessing the Dynamics of Planetary Assembly	Nov. 2019 (invited)
Visualizing the Kinematics of Planet Formation  Exploiting ALMA's Potential for Planet Hunting	Oct. 2019
Gordon Research Seminar Unveiling the Dynamics of Planet Formation	June 2019
	Apr 2010
AU Symposium 350: Laboratory Astrophysics The Physical Conditions of Planet Formation with Molecular Excitation	Apr. 2019 (invited)
Planet-Forming Disks	Mar. 2019
Unveiling the Dynamics of Planet Formation	(invited)
NAOJ Theoretical Astronomy Seminar	Oct. 2018
Observing the Kinematics of Planet-Disk Interactions with ALMA	(invited)
LMU Munich Astronomy Colloquium Using Kinematics to Search for Embedded Protoplanets	Aug. 2018 (invited)
University of Tübingen Astronomy Seminar  Kinematical Detections of Embedded Protoplanets	Aug. 2018 (invited)
Astrophysical Frontiers in the Next Decade and Beyond	Apr. 2018
The First Kinematical Detection of Embedded Protoplanets	·
Magnetic Fields or Turbulence A Spatially Resolved Search for Turbulence in TW Hya	Feb. 2018
MPIA Patzer Awards Colloquium  Measuring Turbulence in TW Hya with ALMA: Methods and Limitations	Nov. 2016 (invited)
MPIA Königstuhl Colloquium	Nov. 2016
Observing the Earliest Stages of Planet Formation	(invited)
Astrochemistry with ALMA Cycle 4 Detecting Turbulence in Protoplanetary Disks	Jun. 2016 (invited)
Sant-Cugat Forum on Astrophysics Turbulence in Protoplanetary Disks: Methods and Limitations	Apr. 2016
Protoplanetary Discussions Turbulence in TW Hya	Mar. 2016
Chemical Diagnostics of Star and Planet Formation Deuterium Fraction in Protoplanetary Disks	Jan. 2015 (invited)
	Jan. 2015
ZAG - IPAG - MPIA Workshop on Planet Formation Deuterium Fraction in DM Tau	(invited)
ALMA PI: <b>Teague, R.</b> , 183 hours, 2021.1.01123.L, A ranked co-PIs: Bensity, M., Facchini, S., Fukagawa, M. & Pinte, C. exoALMA Large Program	2021
JWST co-Pls: Cugno, G. & Teague, R., 8 hours, 2153, Detecting a Young 2 Jupiter Mass Planet Embedded in the Disk of HD 163296	Cycle 1
SMA PI: Teague, R., 6 hours, 2020A-S033, B ranked A 3D Exploration of an Edge-On Self-Gravitating Disk	2020b
SMA PI: Teague, R., 10 hours, 2020A-S033, A ranked	2020a

SUCCESSFUL TELESCOPE PROPOSALS (AS PI)

	<b>ALMA</b> PI: <b>Teague, R.</b> , 13.8 hours, 2019.1.01357.S, A ranked Constraining the H2 Surface Density Profile in IM Lup	2019
	<b>ALMA</b> PI: <b>Teague, R.</b> , 3.0 hours, 2019.1.00794.S, B ranked Detecting the Photoevaporative Wind in IM Lup	2019
	<b>ALMA</b> PI: <b>Teague, R.</b> , 33.2 hours, 2019.1.00419.S, B ranked Mapping the 3D Kinematic Structure of Planet Formation	2019
	<b>ALMA</b> PI: <b>Teague, R.</b> , 20.2 hours, 2018.A.00021.S, DDT Confirmation of an Embedded Planet in the Disk of TW Hya	2019
	Magellan/MagAO PI: Teague, R., 6 hours Searching for Wide Separation Planets in AS 209	2018
	<b>ALMA</b> PI: <b>Teague, R.</b> , 6.7 hours, 2018.1.00980.S, A ranked An Unambiguous Detection of a Magnetic Field in a Protoplanetary Disk	2018
	<b>ALMA</b> PI: <b>Teague, R.</b> , 5.3 hours, 2016.1.00440.S, A ranked Model Independent Study of Turbulence and Temperature in TW Hya	2016
	<b>IRAM PdBI</b> PI: <b>Teague, R.</b> , 19.9 hours, W14BI, C ranked Disk Diagnostics with Deuteration	2014
(AS CO-I)	Including over 355 hours with <b>ALMA</b> , 150 hours with <b>IRAM</b> telescopes, 30 hours with the <b>SMA</b> , 50 hours with the <b>VLA</b> , 50 hours with <b>VLT</b> (X-SHOOTER, SPHERE and CRIRES), 2 nights with <b>Magellan</b> (MagAO/MagAOx) and 18 hours with <b>JWST</b> .	
Outreach	University of Michigan Lowbrow Astronomers  How to Find Baby Planets	Nov. 2020
SCHOOL PARTICIPATION	45th Saas-Fee Course From Protoplanetary Disks to Planet Formation	2015
	Heidelberg Graduate School on Fundamental Physics	2015
	DIANA Protoplanetary Disk School	2014
OBSERVING EXPERIENCE	Sub-Millimeter Array Monthly rota	Sep. 2019 –
	MPG/ESO 2.2m 14 nights	2016
TEACHING	Wavefront Analysis Laboratory Instructor	2014
PUBLICATIONS (LEAD AUTHOR)	<b>Teague, R.</b> , Bae, J., Aikawa, Y., et al., ApJS, in press  MAPS XVIII: Kinematic Substructure in the Disks of HD 163296 and MWC 480	
	<b>Teague, R.</b> , Hull, C. L. H., Bergin, E. A., et al., ApJ, in press Discovery of Molecular Line Polarization in the Disk of TW Hya	
	<b>Teague, R.</b> & Loomis, R. A., ApJ, 899  The Excitation Conditions of CN in TW Hya	
	<b>Teague, R.</b> , Jankovic, M. R., Haworth, T. J., et al., MNRAS, 495 A Three Dimensional View of Gomez's Hamburger	
	<b>Teague, R.</b> , 2019, IAU Proceedings Series, 350  Tracing The Physical Conditions of Planet Formation with Molecular Excitation	
	<b>Teague, R.</b> , Bae, J., Huang, J., Bergin, E. 2019, ApJL, 884 Spiral Structure in the Gas Disk of TW Hya	
	<b>Teague, R.</b> , Bae, J., Bergin, E. 2019, Nature, 574  Meridional Flows in the Disk Around a Young Star	
	<b>Teague, R.</b> , 2019, Journal of Open Source Software, 4	

GoFish: Fishing for Line Observations in Protoplanetary Disks

Teague, R., 2019, RNAAS, 3

[non-refereed] Statistical Uncertainties in Moment Maps of Line Emission

Teague, R., 2019, Journal of Open Source Software, 4

eddy: Extracting Protoplanetary Disk Dynamics with Python

Teague, R., Bae, J., Birnstiel, T. & Bergin, E., 2018, ApJ, 868

Evidence For A Vertical Dependence on the Pressure Structure in AS 209

Teague, R. & Foreman-Mackey, D., 2018, RNAAS, 2

[non-refereed] A Robust Method to Measure Centroids of Spectral Lines

Teague, R., Henning, T., Guilloteau, S., et al., 2018, ApJ, 864

Temperature, Mass, and Turbulence: A Spatially Resolved Multiband Non-LTE Analysis of CS in TW Hya

Teague, R., Bae, J., Bergin, E. A., et al., 2018, ApJL, 860

A Kinematical Detection of Two Embedded Jupiter-mass Planets in HD 163296

Teague, R., Semenov, D., Gorti, U., et al., 2017, ApJ, 835

Surface Density Perturbations in the TW Hydrae Disk at 95 au Traced by Molecular Emission

Teague, R., Guilloteau, S., Semenov, D., et al., 2016, A&A, 592

Measuring turbulence in TW Hya with ALMA: methods and limitations

Teague, R., Semenov, D., Guilloteau, S., et al., 2015, A&A, 574

Chemistry in disks. IX. Observations and modelling of  $HCO^+$  and  $DCO^+$  in DM Tauri

All papers with a substantial component of student supervision are marked. (CO-AUTHOR)

Yu, H., Teague, R., Bae, J. & Öberg, K., ApJL, in press

[student paper] Mapping the 3D Kinematical Structure of the Gas Disk of HD 169142

Oberg, K. I., Guzmán, V. V., Walsh, C., et al., ApJS, in press

MAPS I: Program Overview and Highlights

Czekala, I., Loomis, R. A., Teague, R., et al., ApJS, in press

MAPS II: CLEAN Strategies for Synthesizing Images of Molecular Line Emission in Protoplanetary Disks

Law C. J., Loomis, R. A., Teague, R., et al., ApJS, in press

[student paper] MAPS III: Characteristics of Radial Chemical Substructures

Law C. J., Teague, R., Loomis, R. A., et al., ApJS, in press

[student paper] MAPS IV: Vertical Disk Chemical Structures

Zhang, K., Booth, A. S., Law, C. J., et al., ApJS, in press

MAPS V: CO Gas Distributions

Guzmán, V., Ö, K. I., Aikawa, Y., et al., ApJS, in press

MAPS VI: Distribution of the small organics HCN, C2H and H2CO

Bosman, A., Alarcon, F., Bergin, E. A., et al., ApJS, in press

MAPS VII: Sub-stellar O/H and C/H and Super-stellar C/O in Planet Feeding Gas

Alarcon, F., Bosman, A., Bergin, E. A., et al., ApJS, in press

MAPS VIII: Gap chemistry in AS 209 - Gas Depletion or Chemical Processing?

llee, J. D., Walsh, C., Booth, A. S., et al., ApJS, in press

MAPS IX: Distribution and properties of the Large Organic molecules HC<sub>3</sub>N, CH<sub>3</sub>CN and c-C<sub>3</sub>H<sub>2</sub>

Cataldi, G., Yamato, Y., Aikawa, Y., et al., ApJS, in press

MAPS X: Distributions of Deuterated Molecules

Bergner, J., Öberg, K. I., Bosman, A., et al., ApJS, in press

MAPS XI: CN and HCN as Tracers of Photochemistry in Disks

Le Gal, R., Öberg, K. I., Aikawa, Y., et al., ApJS, in press

MAPS XII: Inferring the C/O and S/H ratios in Protoplanetary Disks with Sulfur Molecules

Aikawa, Y., Cataldi, G., Yamato, Y., et al., ApJS, in press

MAPS XIII: HCO+ and Disk Ionization

Sierra, A., Peréz, L. M., Guzmán, V. V., et al., ApJS, in press

MAPS XIV: Revealing Dust Disks Substructures From Nulti-wavelength Continuum Emission

Bosman, A., Bergin, E. A., Öberg, K. I., et al., ApJS, in press

MAPS XV: Tracing Protoplanetary Disk Structure Within 20 AU

Booth, A. S., Tabone, B., Aikawa, Y., et al., ApJS, in press

MAPS XVI: Zooming in on the HD 163296 Disk Wind with CO Isotopologues

Calahan, J., Bergin, E. A., Zhang, K., et al., ApJS, in press

MAPS XVII: Uncovering the 2D Thermal Structure of HD 163296

Huang, J., Bergin, E. A., Öberg, K. I., et al., ApJS, in press

MAPS XIX: Spiral Arms, a Tail, and Diffuse Structures Traced by CO Toward the GM Aur Disk

Schwarz, K., Calahan, J., Zhang, K., et al., ApJS, in press

MAPS XX: The Massive Disk Around GM Aurigae

Canta, A., Teague, R., le Gal., R., et al., ApJ, submitted

[student paper] The first detection of CH2CN in a protoplanetary disk

Benisty, M., Bae, J., Facchini, S., et al., ApJL, 916

A Circumplanetary Disk Around PDS 70c

Andrews, S. M., Elder, W., Zhang, S., et al., ApJ, in press

Limits on Millimeter Continuum Emission from Circumplanetary Material in the DSHARP Disks

Long, F., Andrews, S. M., Vega, J., et al., ApJ, in press

The Architecture of the V892 Tau System: the Binary and its Circumbinary Disk

Rich, E., Teague, R., Monnier, J., et al. ApJ, 913

Are Small Dust Grains actually coupled to the Gas in Protoplanetary Disks?

Pegues, J., Öberg, K. I., Bergner, J. B., et al., ApJ, 911

An ALMA Survey of Chemistry in Disks around Late-Type M-Stars

Facchini, S., Teague, R., Bae, J., et al. ApJ, in press

The chemical inventory of the planet-hosting disk PDS 70

Boehler, Y., Ménard, F., Robert, C. M. T., et al. A&A, 650

Vortex-like kinematic signal, spirals, and beam smearing effect in the HD 142527 disk

Bae, J., Teague, R., Zhu, Z., ApJ, 912

Tightly-Wound Spirals Driven by Buoyancy Resonance in Protoplanetary Disks

Cleeves, L. I., Loomis, R. A., Teague, R., et al., ApJ, 911

The TW Hya Rosetta Stone Project IV: A hydrocarbon rich disk atmosphere

Pegues, J., Czekala, I., Andrews, S. M., ApJ, 908

Dynamical Masses and Stellar Evolutionary Model Predictions of Low-Mass M-Stars

Harrison, R. E., Looney, L. W., Stephens, I. W., et al., ApJ, 908

ALMA CN Zeeman Observations of AS 209: Limits on Magnetic Field Strength and Magnetically Driven Accretion Rate

Garufi, A., Podio, L., Codella, C., et al., A&A, 645

ALMA chemical survey of disk-outflow sources in Taurus (ALMA-DOT V)

Calahan, J., Bergin, E. A., Zhang, K., et al., ApJ, 908

[student paper] Uncovering the Thermal Profile of a Typical Gaseous Protoplanetary Disk

Wölfer, L., Facchini, S., Kurtovic, N. T., et al. A&A, 648

A highly non-Keplerian protoplanetary disc

Terwisscha, J. v. S., Hogerheijde, M. R., Cleeves, L. I., et al., ApJ, 906

Spatially resolved emission of formaldehyde hints at low-temperature gas-phase formation

Öberg, K., Cleeves, L. I., Bergner, J., et al., AJ, 161

Radial and vertical distributions of DCN and DCO+ in the TW Hya disk

Podio, L., Garufi, A., Codella, C., et al., A&A, 644

ALMA chemical survey of disk-outflow sources in Taurus (ALMA-DOT II)

Alarcón, F., Teague, R., Zhang, K., et al., ApJ, 905

[student paper] Chemical Evolution in a Protoplanetary Disk with Dust Substructures

White, J. A., Kóspál, Á, Hughes, A. G. Hughes, et al., 2020, ApJ, 904

ALMA and VLA Observations of EX Lupi in its Quiescent State

Stephens, I. W., Fernández-López, M., Li, Z.-H., et al., 2020, ApJ, 901

Low Level Carbon Monoxide Line Polarization in two Protoplanetary Disks

Hall, C., Dong, R., Teague, R., et al., ApJ, 904

Kinematic Evidence for Gravitational Instability

Long, D. E., Zhang, K., Teague, R., et al., 2020, ApJL, 895

[student paper] Hints of a Population of Solar System Analog Planets from ALMA

Facchini, S., Benisty, M., Bae, J., et al., 2020, A&A, 639

Annular substructures in the transition disks around LkCa 15 and J1610

Garufi, A., Codella, C., Rygl, K., et al., 2020, A&A, 636

ALMA chemical survey of disk-outflow sources in Taurus (ALMA-DOT I)

Rosotti, G., Teague, R., Dullemond, C., et al., 2020, MNRAS, 495

The Efficiency of Dust Trapping in Ringed Protoplanetary Discs

Semenov, D. & Teague, R. 2020, Europhysics News, 51

Accretion disks around young stars: the cradles of planet formation

Huang, J., Andrews, S. M., Dullemond, C. P., et al., 2020, ApJ, 891

A multi-frequency ALMA characterization of substructures in the GM Aur protoplanetary disk

Rosotti., G., Benisty, M., Juhazs, A., et al., 2020, MNRAS, 491.

Spiral arms in the proto-planetary disc HD100453 detected with ALMA

Bae, J., Zhu, Z., Baruteau, C., et al., 2019, ApJL, 884

An Ideal Testbed for Planet-disk Interaction: Two Giant Protoplanets in Resonance Shaping the PDS 70 Disk

Isella, A., Benisty, M., Teague, R., et al., 2019, ApJL, 879

Detection of Continuum Submillimeter Emission Associated with Candidate Protoplanets

Cleeves, L. I., Loomis, R. A., Teague, R., et al., 2019, BAAS, 51

Realizing the Unique Potential of ALMA to Probe the Gas Reservoir of Planet Formation

Lyra, W., Haworth, T., Bitsch, B., et al., 2019, BAAS, 51

Planet formation âĂŤ The case for large efforts on the computational side

Gallo, E., Teague, R., Plotkin, R. M., et al., 2019, MNRAS, 488

ALMA observations of A0620-00: fresh clues on the nature of quiescent black hole X-ray binary jets

Schwarz, K., Teague, R., Bergin, E., et al., 2019, ApJL, 876.

Line Ratios Reveal N2H+ Emission Originates above the Midplane in TW Hydrae

Keppler, M., Teague, R., Bae, J., et al., 2019, A&A, 625

[student paper] Highly structured disk around the planet host PDS 70 revealed by high-angular resolution observations

Semenov, D., Favre, C., Fedele, D., et al., 2018, A&A, 617

Chemistry in disks. XI. Sulfur-bearing species as tracers of protoplanetary disk physics and chemistry: the DM Tau case

Flaherty, K. M., Hughes, A. M., **Teague**, **R.**, et al., 2018, ApJ, 856 *Turbulence in the TW Hya Disk* 

Fedele, D., Tazzari, M., Booth, R., et al., 2018, A&A, 610

ALMA continuum observations of the protoplanetary disk AS 209. Evidence of multiple gaps opened by a single planet

Flock, M., Nelson, R. P., Turner, N. J., et al., 2017, ApJ, 850

Radiation Hydrodynamical Turbulence in Protoplanetary Disks: Numerical Models and Observational Constraints

Dutrey, A., Guilloteau, S., Piétu, V., et al., 2017, A&A, 607

The Flying Saucer: Tomography of the thermal and density gas structure of an edge-on protoplanetary disk

Beuther, H., Linz, H., Henning, T., et al., 2017, A&A, 605

Multiplicity and disks within the high-mass core NGC 7538IRS1.

Parfenov, S. Y., Semenov, D. A., Henning, T., et al., 2017, MNRAS, 468

On the methanol emission detection in the TW Hya disc: the role of grain surface chemistry and non-LTE excitation

van Boekel, R., Henning, T., Menu, J., et al., 2017, ApJ, 837

Three Radial Gaps in the Disk of TW Hydrae Imaged with SPHERE

Haworth, T. J., Ilee, J. D., Forgan, D. H., et al., 2016, PASA, 33

Grand Challenges in Protoplanetary Disc Modelling

Feng, S., Beuther, H., Semenov, D., et al., 2016, A&A, 593

Inferring the evolutionary stages of the internal structures of NGC 7538 S and IRS1 with chemistry