Richard Teague

Curriculum Vitae

CONTACT INFORMATION	Center for Astrophysics 60 Garden Street MS 78 Cambridge, MA, 02138	rden Street MS 78 https://richteague.github.io	
Research Experience	Center for Astrophysics Harvard & S Submillimeter Array Fellow	mithsonian Sep. 2019 –	
	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		
	University of Edinburgh, Edinburgh, University of Edinburgh, University of Edinburgh, Edinburgh, University of Edinburgh,	ited Kingdom Sep. 2008 – May 2013	
Honours & Awards	Harvard Data Science Initiative Research Fund (\$9,700) Mar. 202 Regularized Maximum Likelihood Imaging: A New Method for Detecting Planets		
	Ernst Patzer Award Awarded for the best refereed publication by a young	Nov. 2016 scientist.	
	Pre-Honours Certificate of Merit Awarded for top 5% performance in pre-honours exa	May 2011	
	Pre-Honours Certificate of Merit Awarded for top 5% performance in pre-honours exa	May 2010 wms.	
Publication Summary	16 first author papers, including one published in <i>Nature</i> , and 24 co-author papers, totaling 505 citations. Data taken from NASA's ADS. A full bibliography can be found at the end of the CV.		
Observational Time Summary	I have been awarded over 82 hours (200 hours) of time on ALMA as PI (co-I), 20 hours (150 hours) on IRAM telescopes as PI (co-I) and 10 hours (30 hours) on the SMA as PI (co-I). A break down of proposals can be found below.		
Professional Services	SMA Interferometry School SOC SMA, Hilo, Hawaii, USA	Mar. 2021	
	Advanced Data Analysis Techniques for NRAO, Charlottesville, Virginia, USA [postponed data]		

	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	2015 - 2017
	Departmental Seminar Series	
	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
	Felipe Alcaron University of Michigan Graduate student. Co-supervised with Ted Bergin and Ke Zhang, UMich.	2019 - 2020
	Jenny Calahan University of Michigan Graduate student. Co-supervised with Ted Bergin and Ke Zhang, UMich.	2019 – 2020
	Deryl Long University of Michigan Undergraduate student. Co-supervised with Ted Bergin and Ke Zhang, UMich	2019 h.
	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 & Seminars	Research Unit Transition Disks (RUTD) Conference Observing the Dynamics of Planet Disk Interactions	October 2020 (invited)
	From Clouds to Planets II: The Astrochemical Link ALMA's 3D View of Planet Formation [postponed due to Covid-19]	October 2020 (invited)
	Exoplanets III Kinematical Detection and Characterizing of Protoplanets with ALMA	July 2020
	MPIA Königstuhl Colloquium Visualizing the Assembly of Planetary Systems	July 2020 (invited)
	JPL Astrophysics Colloqium Witnessing the Dynamics of Planetary Assembly	November 2019 (invited)
	Gordon Research Seminar Unveiling the Dynamics of Planet Formation	June 2019
	IAU Symposium 350: Laboratory Astrophysics Tracing The Physical Conditions of Planet Formation with Molecular Exci	Apr. 2019 tation (invited)
	Planet-Forming Disks Unveiling the Dynamics of Planet Formation	Mar. 2019 (invited)
	NAOJ Theoretical Astronomy Seminar Observing the Kinematics of Planet-Disk Interactions with ALMA	Oct. 2018 (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 The First Kinematical Detection of Embedded Protoplanets	d Apr. 2018
	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 Observing the Earliest Stages of Planet Formation	Nov. 2016 (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)

	ZAG - IPAG - MPIA Workshop on Planet Formation Deuterium Fraction in DM Tau	Jan. 2015 (invited)
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.	2019 –
	MPG/ESO 2.2m 14 nights	2016
TEACHING	Wavefront Analysis Laboratory Instructor	2014
Successful Telescope	SMA PI: Teague , R. , 10 hours, 2020A-S033, A ranked A 3D Exploration of an Edge-On Self-Gravitating Disk	2020
Proposals (as pi)	ALMA PI: Teague , R. , 13.8 hours, 2019.1.01357.S, A ranked Constraining the H2 Surface Density Profile in IM Lup	2019
	ALMA PI: Teague , R. , 3.0 hours, 2019.1.00794.S, B ranked Detecting the Photoevaporative Wind in IM Lup	2019
	ALMA PI: Teague , R. , 33.2 hours, 2019.1.00419.S, B ranked Mapping the 3D Kinematic Structure of Planet Formation	2019
	ALMA PI: Teague , R. , 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
	ALMA PI: Teague , R. , 6.7 hours, 2018.1.00980.S, A ranked An Unambiguous Detection of a Magnetic Field in a Protoplanetary Disk	2018
	ALMA PI: Teague, R., 5.3 hours, 2016.1.00440.S, A ranked Model Independent Study of Turbulence and Temperature in TW Hya	2016
	IRAM PdBI PI: Teague, R. , 19.9 hours, W14BI, C ranked Disk Diagnostics with Deuteration	2014
(AS CO-I)	Including over 200 hours with ALMA , 150 hours with IRAM telescopes, 30 hours with the SMA , 50 hours with the VLA , 25 hours with VLT (X-shooter and SPHERE), and 2 nights with Magellan (MagAO/MagAOx).	

PUBLICATIONS

Disk Dynamics Collaboration, et al., PASA, in review

Vizualizing the Kinematics of Planet Formation [corresponding author]

Teague, R., Hull, C. L. H., Bergin, E. A., et al., ApJ, in review Sub-mm Polarization in the Disk of TW Hya

Teague, R. Loomis, R. A., ApJ, 899

The Excitation Conditions of CN in TW Hya

Teague, R., Jankovic, M. R., Haworth, T. J., et al., MNRAS, 495 A Three Dimensional View of Gomez's Hamburger

Teague, R., 2019, IAU Proceedings Series, in press.

Tracing The Physical Conditions of Planet Formation with Molecular Excitation

Teague, R., Bae, J., Huang, J., Bergin, E. 2019, ApJL, 884 Spiral Structure in the Gas Disk of TW Hya

Teague, R., Bae, J., Bergin, E. 2019, Nature, 574 Meridional Flows in the Disk Around a Young Star

Teague, R., 2019, Journal of Open Source Software, 4 GoFish: Fishing for Line Observations in Protoplanetary Disks

Teague, **R.**, 2019, RNAAS, 3

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 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

A Surface Density Perturbation 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

(CO-AUTHOR) Stephens, I. W., Fernández-López, M., Li, Z.-H., et al., ApJ, in press

Low Level Carbon Monoxide Line Polarization in two Protoplanetary Disks: HD 142527 and

IM Lup)

Hall, C., Dong, R., **Teague**, R., et al., ApJ, in press

Kinematic Evidence for Gravitational Instability

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

Hints of a Population of Solar System Analog Planets from ALMA

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

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 Protoplanetary Disk

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

Detection of Continuum Submillimeter Emission Associated with Candidate Protoplanets

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

Highly structured disk around the planet host PDS 70 revealed by high-angular resolution observations with ALMA

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. Resolving cm line and continuum emission at $0.06\hat{a}\check{A}\tilde{s}\times0.05\hat{a}\check{A}\tilde{s}$ resolution

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