CONTACT INFORMATION	Center for Astrophysics 60 Garden Street MS 78 Cambridge, MA, 02138 richar	(+1) 617-495-7259 https://richteague.github.io .d.teague@cfa.harvard.edu	
Research Experience	Center for Astrophysics   Harvard & Smithsonian Submillimeter Array Fellow	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, Ph.D. in Astronomy (Magna Cum Laude)	Germany Oct. 2013 – Jan. 2017	
	University of Edinburgh, Edinburgh, United Kingd MPhys Astrophysics (First Class Honours)	om Sep. 2008 – May 2013	
Honours & Awards	Harvard Data Science Initiative Research Fund (\$9,700)  Regularized Maximum Likelihood Imaging: A New Method for Detecting Planets		
	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	
	<b>Pre-Honours Certificate of Merit</b> Awarded for top 5% performance in pre-honours exams.	May 2010	
OBSERVATIONAL TIME SUMMARY	I have been awarded over <b>82 hours</b> (200 hours) of time on ALMA as PI (co-I), <b>20 hours</b> (165 hours) on IRAM telescopes as PI (co-I) and <b>10 hours</b> (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 ALMA S NRAO, Charlottesville, Virginia, USA [postponed due to Covid-		
	SMA Seminar Organizer Departmental Seminar Series	2020 - 2021	
	Visualizing the Kinematics of Planet Formation S Flatiron Institute, New York City, USA	OC Oct. 2019	
	Postdoc and Research Scientist DEI Representation  Department Diversity, Equity and Inclusion Committee Member		
	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
	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
	<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 & SEMINARS	Planet-forming Disks: From Surveys to Answers  Lorentz Center Workshop	Sep. 2021 (invited)
	Caltech Dix Planetary Science Department Seminar  Planet Formation in 6D	Feb 2021 <i>(invited)</i>
	Research Unit Transition Disks (RUTD) Conference Observing the Dynamics of Planet Disk Interactions	Oct. 2020 (invited)
	From Clouds to Planets II: The Astrochemical Link  ALMA's 3D View of Planet Formation [postponed due to Covid-19]	Oct. 2020 (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	Nov. 2019
	Witnessing the Dynamics of Planetary Assembly	(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
	IAU Symposium 350: Laboratory Astrophysics The Physical Conditions of Planet Formation with Molecular Excitation	Apr. 2019 (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	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)
SUCCESSFUL TELESCOPE PROPOSALS (AS PI)	<b>SMA</b> PI: <b>Teague, R.</b> , 10 hours, 2020A-S033, A ranked A 3D Exploration of an Edge-On Self-Gravitating Disk	2020
	<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</b> , <b>R.</b> , 33.2 hours, 2019.1.00419.S, B ranked <i>Mapping the 3D Kinematic Structure of Planet Formation</i>	2019
	<b>ALMA</b> PI: <b>Teague</b> , <b>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 <i>Model Independent Study of Turbulence and Temperature in TW Hya</i>	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 200 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> , 25 hours with <b>VLT</b> (X-shooter and SPHERE), and 2 nights with <b>Magellan</b> (MagAO/MagAOx).	
SCHOOL	45th Saas-Fee Course	2015
PARTICIPATION	From Protoplanetary Disks to Planet Formation	
	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>Disk Dynamics Collaboration</b> , et al., PASA, under review Vizualizing the Kinematics of Planet Formation [corresponding author]	
	<b>Teague, R.</b> , Hull, C. L. H., Bergin, E. A., et al., ApJ, under review <i>Sub-mm Polarization in the Disk of TW Hya</i>	
	<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, in press. <i>Tracing The Physical Conditions of Planet Formation with Molecular Excitation</i>	
	<b>Teague, R.</b> , Bae, J., Huang, J., Bergin, E. 2019, ApJL, 884 <i>Spiral Structure in the Gas Disk of TW Hya</i>	
	<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	
	<b>Teague, R.</b> , 2019, RNAAS, 3 Statistical Uncertainties in Moment Maps of Line Emission	
	<b>Teague, R.</b> , 2019, Journal of Open Source Software, 4 eddy: Extracting Protoplanetary Disk Dynamics with Python	
	<b>Teague, R.</b> , 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

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<sup>+</sup> and DCO<sup>+</sup> in DM Tauri

Öberg, K., Cleeves, L. I., Bergner, J., et al., AJ, in press (CO-AUTHOR)

Radial and vertical distributions of DCN and DCO<sup>+</sup> in the TW Hya disk

Podio, L., Garufi, A., Codella, C., et al., ApJ, in press

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

Alarcón, F., **Teague, R.**, Zhang, K., et al., ApJ, in press

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

White, J. A., Kóspál, Á, Hughes, A. G. Hughes, et al., ApJ, in press

ALMA and VLA Observations of EX Lupi in its Quiescent State

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

Low Level Carbon Monoxide Line Polarization in two Protoplanetary Disks

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

[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 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 iets

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 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  $0.06 \hat{a} \hat{A} \hat{s} \times 0.05 \hat{a} \hat{A} \hat{s}$  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

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