

Richard Teague

Curriculum Vitae

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
CITIZENSHIP	United Kingdom	
RESEARCH EXPERIENCE	Smithsonian Astrophysical Observatory <i>Submillimeter Array Fellow</i>	Sep. 2019 – Apr. 2020
	University of Michigan <i>Postdoctoral Researcher</i>	May 2017 – Jul. 2019
	Max-Planck-Institute for Astronomy <i>Postdoctoral Researcher</i>	Jan. 2017 – Apr. 2017
EDUCATION	Max-Planck-Institute for Astronomy , Heidelberg, Germany Ph.D. in Astronomy (Magna Cum Laude)	Oct. 2013 – Jan. 2017
	University of Edinburgh , Edinburgh, United Kingdom MPhys Astrophysics (First Class Honours)	Sept. 2008 – May 2013
HONOURS & AWARDS	Harvard Data Science Initiative Research Fund (\$9,700) <i>Regularized Maximum Likelihood Imaging: A New Method for Detecting Planets</i>	Mar. 2020
	Ernst Patzer Award <i>Awarded for the best refereed publication by a young scientist.</i>	Nov. 2016
	Pre-Honours Certificate of Merit <i>Awarded for top 5% performance in pre-honours exams.</i>	May 2011
	Pre-Honours Certificate of Merit <i>Awarded for top 5% performance in pre-honours exams.</i>	May 2010
PUBLICATION SUMMARY	14 first author papers , including one published in <i>Nature</i> , and 21 co-author papers, totaling 433 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). A break down of proposals can be found at the end of the CV.	
PROFESSIONAL SERVICES	Advanced Data Analysis Techniques for ALMA SOC <i>NRAO, Charlottesville, Virginia, USA</i>	Oct. 2020

	Visualizing the Kinematics of Planet Formation SOC <i>Flatiron Institute, New York City, USA</i>	Oct. 2019
	Postdoc and Research Scientist DEI Representative <i>Department Diversity, Equity and Inclusion Committee Member</i>	2018 – 2019
	Equi-Tea Organizer <i>Diversity, Equity and Inclusion Journal Club</i>	2018 – 2019
	Stars, Planets and Formation Seminar Organizer <i>Departmental Seminar Series</i>	2018 – 2019
	Conversations on Equity and Inclusion Co-organizer <i>Joint Physics / Astronomy / Space Sciences DEI Colloquium Series</i>	2018 – 2019
	NESSF External Reviewer	2018 –
	Heidelberg MPG Student Workshop Organizer	2016
	PSF Coffee Organizer <i>Departmental Seminar Series</i>	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	Alessandra Canta Harvard University <i>Undergraduate student. Co-supervised with Karin Oberg, Harvard</i>	2020
	Felipe Alcaron University of Michigan <i>Graduate student. Co-supervised with Ted Bergin and Ke Zhang, UMich.</i>	2019 – 2020
	Jenny Calahan University of Michigan <i>Graduate student. Co-supervised with Ted Bergin and Ke Zhang, UMich.</i>	2019 – 2020
	Deryl Long University of Michigan <i>Undergraduate student. Co-supervised with Ted Bergin and Ke Zhang, UMich.</i>	2019
	Case Hazewinkel University of Michigan <i>Undergraduate student. Co-supervised with Ted Bergin, UMich.</i>	2019
	Jeanne Kwon University of Michigan <i>Undergraduate Research Opportunity Program</i>	2018 – 2019
	Julian Penzinger Ludwig Maximilian University <i>Summer student. Co-supervised with Dmitry Semenov, MPIA.</i>	2016, 2018
TALKS & SEMINARS	From Clouds to Planets II: The Astrochemical Link <i>ALMA's 3D View of Planet Formation</i>	October 2020 (invited)
	Exoplanets III <i>Kinematical Detection and Characterizing of Protoplanets with ALMA</i>	July 2020

JPL Astrophysics Colloquium	November 2019
<i>Witnessing the Dynamics of Planetary Assembly</i>	(invited)
Gordon Research Seminar	June 2019
<i>Unveiling the Dynamics of Planet Formation</i>	
IAU Symposium 350: Laboratory Astrophysics	Apr. 2019
<i>Tracing The Physical Conditions of Planet Formation with Molecular Excitation</i>	(invited)
Planet-Forming Disks	Mar. 2019
<i>Unveiling the Dynamics of Planet Formation</i>	(invited)
NAOJ Theoretical Astronomy Seminar	Oct. 2018
<i>Observing the Kinematics of Planet-Disk Interactions with ALMA</i>	(invited)
LMU Munich Astronomy Colloquium	Aug. 2018
<i>Using Kinematics to Search for Embedded Protoplanets</i>	(invited)
University of Tübingen Astronomy Seminar	Aug. 2018
<i>Kinematical Detections of Embedded Protoplanets</i>	(invited)
Astrophysical Frontiers in the Next Decade and Beyond	Apr. 2018
<i>The First Kinematical Detection of Embedded Protoplanets</i>	
Magnetic Fields or Turbulence	Feb. 2018
<i>A Spatially Resolved Search for Turbulence in TW Hya</i>	
MPIA Patzer Awards Colloquium	Nov. 2016
<i>Measuring Turbulence in TW Hya with ALMA: Methods and Limitations</i>	(invited)
MPIA Königstuhl Colloquium	Nov. 2016
<i>Observing the Earliest Stages of Planet Formation</i>	(invited)
Astrochemistry with ALMA Cycle 4	Jun. 2016
<i>Detecting Turbulence in Protoplanetary Disks</i>	(invited)
Sant-Cugat Forum on Astrophysics	Apr. 2016
<i>Turbulence in Protoplanetary Disks: Methods and Limitations</i>	
Protoplanetary Discussions	Mar. 2016
<i>Turbulence in TW Hya</i>	
Chemical Diagnostics of Star and Planet Formation	Jan. 2015
<i>Deuterium Fraction in Protoplanetary Disks</i>	(invited)
ZAG - IPAG - MPIA Workshop on Planet Formation	Jan. 2015
<i>Deuterium Fraction in DM Tau</i>	(invited)

SCHOOL PARTICIPATION	45th Saas-Fee Course	2015
	<i>From Protoplanetary Disks to Planet Formation</i>	
	Heidelberg Graduate School on Fundamental Physics	2015
	DIANA Protoplanetary Disk School	2014

OBSERVING EXPERIENCE	Sub-Millimeter Array <i>Monthly rota.</i> MPG/ESO 2.2m <i>14 nights</i>	2019 – 2016
TEACHING	Wavefront Analysis Laboratory Instructor	2014
SUCCESSFUL TELESCOPE PROPOSALS (AS PI)	ALMA PI: Teague, R. , 13.8 hours, 2019.1.01357.S, A ranked <i>Constraining the H2 Surface Density Profile in IM Lup</i> ALMA PI: Teague, R. , 3.0 hours, 2019.1.00794.S, B ranked <i>Detecting the Photoevaporative Wind in IM Lup</i> ALMA PI: Teague, R. , 33.2 hours, 2019.1.00419.S, B ranked <i>Mapping the 3D Kinematic Structure of Planet Formation</i> ALMA PI: Teague, R. , 20.2 hours, 2018.A.00021.S, DDT <i>Confirmation of an Embedded Planet in the Disk of TW Hya</i> Magellan/MagAO PI: Teague, R. , 6 hours <i>Searching for Wide Separation Planets in AS 209</i> ALMA PI: Teague, R. , 6.7 hours, 2018.1.00980.S, A ranked <i>An Unambiguous Detection of a Magnetic Field in a Protoplanetary Disk</i> ALMA PI: Teague, R. , 5.3 hours, 2016.1.00440.S, A ranked <i>Model Independent Study of Turbulence and Temperature in TW Hya</i> IRAM PdBI PI: Teague, R. , 19.9 hours, W14BI, C ranked <i>Disk Diagnostics with Deuteration</i>	2019 2019 2019 2019 2018 2018 2016 2014
(AS CO-I)	Including over 200 hours with ALMA , 150 hours with IRAM telescopes, two nights with VLT (X-shooter and SPHERE), and a night with Magellan (MagAO/MagAOx).	
PUBLICATIONS (FIRST AUTHOR)	Teague, R. , Jankovic, M. R., Haworth, T. J., et al., MNRAS, in press. <i>A Three Dimensional View of Gomez's Hamburger</i> Teague, R. , 2019, IAU Proceedings Series, in press. <i>Tracing The Physical Conditions of Planet Formation with Molecular Excitation</i> Teague, R. , Bae, J., Huang, J., Bergin, E. 2019, ApJL, 884 <i>Spiral Structure in the Gas Disk of TW Hya</i> Teague, R. , Bae, J., Bergin, E. 2019, Nature, 574 <i>Meridional Flows in the Disk Around a Young Star</i> Teague, R. , 2019, Journal of Open Source Software, 4 <i>Statistical Uncertainties in Moment Maps of Line Emission</i> Teague, R. , 2019, RNAAS, 3 <i>Statistical Uncertainties in Moment Maps of Line Emission</i>	

- 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) Long, D. E., Zhang, K., **Teague, R.**, et al., 2020, ApJ, in press.
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, in press.
A multi-frequency ALMA characterization of substructures in the GM Aur protoplanetary disk
- Rosotti, G., Benisty, M., Juhász, 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 0.06×0.05 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