

Charles L. H. (Chat) Hull

CONTACT	Joint ALMA Observatory Alonso de Córdova 3107 Vitacura, Santiago Chile	EMAIL: chat.hull@nao.ac.jp WEB: chathull.com TEL: +56 2-2467-6391
EXPERTISE	Star Formation — Polarization — Radio Instrumentation — Millimeter-wave Interferometry	
EDUCATION	University of California, Berkeley , Berkeley, CA	
	Ph.D., Astrophysics	Dec 2014
	<i>Title:</i> “From Cores to Envelopes to Disks: A Multi-scale View of Magnetized Star Formation”	
	<i>Adviser:</i> Richard L. Plambeck	
	M.A., Astrophysics	May 2010
	University of Virginia , Charlottesville, VA	
	B.S., Physics (Highest Distinction); Spanish minor	May 2006
DISTINCTIONS	NAOJ Young Researchers Award	2020
	Beatrice M. Tinsley Scholar, UT Austin	2019
	NAOJ Director General Prize	2018
	NAOJ Fellowship	2017–2022
	Hubble Fellowship	Declined
	NSF Astronomy & Astrophysics Postdoctoral Fellowship	Declined
	Jansky Fellowship	2014–2017
	Ford Foundation Dissertation Fellowship	2013–2014
	Mary Elizabeth Uhl thesis prize, UC Berkeley	2014
	Robert A. Trumpler Graduate Student Excellence Award, UC Berkeley	2013
	American Astronomical Society Rodger Doxsey Travel Prize	2013
	National Science Foundation Graduate Research Fellowship	2010–2013
	Chancellor’s Science Fellowship, UC Berkeley	2008–2010
	Kenan-Lewis Teaching Internship, Woodberry Forest School	2007
	Jefferson Scholarship, University of Virginia	2002–2006
	Phi Beta Kappa	2005
LANGUAGES	English (native); Spanish (fluent); Japanese (elementary); Chuj (elementary; Mayan dialect spoken in San Mateo Ixtatán, Guatemala)	
MEMBERSHIPS	American Astronomical Society (AAS) International Astronomical Union (IAU) Union Radioscopique International (both USNC and URSI) Sociedad Chilena de Astronomía (SOCHIAS) Astronomical Society of Japan (ASJ)	
APPOINTMENTS	Project Assistant Professor, NAOJ (Santiago, Chile)	2017–2022
	NAOJ Fellow, NAOJ ALMA Project (Santiago, Chile)	2017–2022
	Research Associate, Harvard/CfA (Cambridge, MA)	2017–
	Jansky Fellow, NRAO & Harvard/CfA (Cambridge, MA)	2014–2017
	Graduate student researcher, UC Berkeley (Berkeley, CA)	2008–2014

Independent physics tutor (Berkeley, CA)	2009–2013
Physics lecturer, iFly SF Bay (Union City, CA)	Summer 2011
Co-instructor, Radio 101 graduate seminar (Berkeley, CA)	Fall 2010
Graduate student instructor, UC Berkeley (Berkeley, CA)	Fall '08, Fall '09
Faculty member, Woodberry Forest School (Woodberry Forest, VA)	Fall '06, Spring '08
Faculty member, Yinhatil Nab'en School (San Mateo Ixtatán, Guatemala)	2007
Calculus tutor, University of Virginia Athletics Dept. (Charlottesville, VA)	2003–2006
NSF REU research intern, University of Rochester (Rochester, NY)	Summer 2005

FUNDING

JSPS KAKENHI grants

“Early-Career Scientists” grant 20K14527, 2020-2021 (\$30,000 , PI: C. Hull)	Apr 2020
“Early-Career Scientists” grant 18K13586, 2018-2019 (\$30,000 , PI: C. Hull)	Apr 2018

ALMA Development Program

ALMA Development Study (\$200,000 , PI: S. Bhatnagar, co-I: C. Hull)	Aug 2017
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NSF Mid-Scale Innovations Program (MSIP)

MSIP award #1636621 (\$6,131,567 , PI: G. Wilson, co-I: C. Hull)	Sep 2016
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NRAO student observing support

Associated with ALMA project 2013.1.00726.S, PI: C. Hull (\$27,280)	May 2015
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TELESCOPE TIME

ALMA

Polarization in the Beta Pic debris disk (8 hr , A-ranked)	Jul 2019
Scattering in IM Lup at Bands 4 & 6 (16 hr , B-ranked)	Jul 2019
Perseus magnetic fields survey (22 hr , C-ranked)	Jul 2019
Scattering in IM Lup at Bands 3 & 6 (9 hr , B-ranked)	Aug 2018
Perseus magnetic fields survey (18 hr , B-ranked)	Aug 2018
Magnetic fields in BHR 71 (3 hr , A-ranked)	Aug 2017
Magnetic fields in Class 0 envelopes (7 hr , A-ranked)	Aug 2016
Scattering in IM Lup at Band 7 (4 hr , B-ranked)	Aug 2016
Magnetic fields in Class 0 envelopes (6 hr , B-ranked)	Aug 2015
Magnetic fields in Class 0 envelopes (7 hr , B-ranked)	Apr 2014
Magnetic fields in Class II protoplanetary disks (7 hr , C-ranked)	Apr 2014
<i>As co-I, A: 68 hr, 8 proj.; B: 86 hr, 11 proj.; C: 78 hr, 11 proj.</i>	2014–

BLAST-TNG

Magnetic fields toward BHR 71, a protostellar binary (11 hr)	Nov 2018
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VLA

DDT: Exploring new, faint structure around NGC 1275 & 1272 (6 hr)	Apr 2017
DDT: Synchrotron in H α filaments around 3C84 (6 hr)	May 2015
<i>As co-I, 47 hr, 3 proj.</i>	2013–

SMA

Cepheus Polarization Survey: follow-up with SWARM (65 hr)	Apr 2017
Cepheus Polarization Survey: a Pilot Study (38 hr)	May 2016
Measuring the polarization angle of 3C286 at 345 GHz (4 hr)	Feb 2016
Cepheus Polarization Survey: a Pilot Study (38 hr)	May 2015
Envelope rotation in Class 0 protostellar envelopes (12 hr)	Oct 2014

SOFIA

<i>As co-I, 16 hr, 4 proj.</i>	2016–
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CARMA

Magnetic fields in star-forming filaments (24 hr)
TADPOL survey, polarization key project (280 hr)

Mar 2013
Feb 2012

PUBLICATIONS

h-index = **23**; total citations \approx **1,600**

INVITED REVIEW 57. **Hull, C. L. H.** & Zhang, Q., “Interferometric Observations of Magnetic Fields in Forming Stars,” 2019, *Frontiers in Astronomy & Space Sciences*, 6, 3 [ADS]

REFEREED

Underlined names indicate students supervised by C. L. H. Hull

56. Doi, Y. *et al.* (**Hull, C. L. H.**, 9 of 16), “Two-component Magnetic Field along the Line of Sight to the Perseus Molecular Cloud: Contribution of the Foreground Taurus Molecular Cloud,” 2021, *ApJ*, submitted
55. Tychoniec, Ł. *et al.* (**Hull, C. L. H.**, 8 of 11), “Which molecule traces what: chemical diagnostics of protostellar sources,” 2021, *A&A*, submitted
54. Kwon, W. and the JCMT BISTRO Survey Team (**Hull, C. L. H.**, 4 of 152), “B-fields in Star-forming Region Observations (BISTRO): magnetic fields in the filamentary structures of Serpens Main,” 2021, *ApJ*, submitted
53. Hutschenreuter, S. *et al.* (**Hull, C. L. H.**, 17 of 37), “The Galactic Faraday rotation sky 2020,” 2021, *A&A*, submitted [ADS]
52. Lyo, A. and the JCMT BISTRO Survey Team (**Hull, C. L. H.**, 12 of 152), “The JCMT BISTRO Survey: 850/450 μm polarization study toward NGC 2071IR in Orion B,” 2021, *ApJ*, submitted
51. Teague, R., **Hull, C. L. H.**, *et al.*, “Submillimeter polarization in the disk of TW Hya,” 2021, *ApJ*, submitted
50. Chakali, E. and the JCMT BISTRO Survey Team (**Hull, C. L. H.**, 14 of 146), “The JCMT BISTRO survey: unveiling the magnetic fields in star-forming cores of B213,” 2021, *ApJL*, accepted [ADS]
49. Hwang, J. and the JCMT BISTRO Survey Team (**Hull, C. L. H.**, 7 of 37), “The JCMT BISTRO Survey: The Distribution of Magnetic Field Strengths towards the OMC-1 Region,” 2021, *ApJ*, accepted [ADS]
48. Könyves, V. and the JCMT BISTRO Survey Team (**Hull, C. L. H.**, 12 of 36), “The JCMT BISTRO-2 Survey: The Magnetic Field in the Center of the Rosette Molecular Cloud,” 2021, *ApJ*, accepted [ADS]
47. Fernández-López, M. *et al.* (**Hull, C. L. H.**, 5 of 17), “Magnetic Fields in Massive Star-Forming Regions (MagMaR) I. Linear Polarized Imaging of the UCH II Region G5.89–0.39,” 2021, *ApJ*, accepted [ADS]
46. Gendron-Marsolais, M.-L., **Hull, C. L. H.**, *et al.*, “VLA resolves unexpected radio structures in the Perseus cluster,” 2021, *ApJ*, 911, 56 [ADS] [media]
45. Arzoumanian, D. and the JCMT BISTRO Survey Team (**Hull, C. L. H.**, 6 of 149), “Dust polarized emission observations of NGC 6334: BISTRO reveals the details of the complex but organized magnetic field structure of the high-mass star forming hub-filament network,” 2021, *A&A*, 647, 78 [ADS]
44. Ngoc, N. B. and the JCMT BISTRO Survey Team (**Hull, C. L. H.**, 8 of 159), “Observations of magnetic fields surrounding LkH α 101 taken by the BISTRO survey with JCMT-POL-2,” 2020, *ApJ*, 908, 10 [ADS]

43. Cortés, P. C., Le Gouellec, V. J. M., **Hull, C. L. H.**, *et al.*, “The Explosion in Orion-KL as Seen by Mosaicking the Magnetic Field with ALMA,” 2021, *ApJ*, 907, 94 [ADS]
42. Pattle, K. and the JCMT BISTRO Survey Team (**Hull, C. L. H.**, 17 of 29), “JCMT POL-2 and BISTRO Survey observations of magnetic fields in the L1689 molecular cloud,” 2021, *ApJ*, 907, 88 [ADS]
41. Yen, H.-W., Koch, P. M., **Hull, C. L. H.**, and the JCMT BISTRO Survey Team, “The JCMT BISTRO survey: alignment between outflows and magnetic fields in dense cores/clumps,” 2021, *ApJ*, 907, 33 [ADS]
40. Le Gouellec, V. J. M., Maury, A. J., Guillet, V., **Hull, C. L. H.**, *et al.*, “A statistical analysis of dust polarization properties in ALMA observations of Class 0 protostellar cores,” 2020, *A&A*, 644, 11 [ADS]
39. **Hull, C. L. H.** *et al.*, “Characterizing the accuracy of ALMA linear-polarization mosaics,” 2020, *PASP*, 132, 1015 [ADS]
38. Ohashi, S. *et al.* (**Hull, C. L. H.**, 4 of 9), “Solving grain size inconsistency between ALMA polarization and VLA continuum in the Ophiuchus IRS 48 protoplanetary disk,” 2020, *ApJ*, 900, 810 [ADS]
37. Doi, Y. and the JCMT BISTRO Survey Team (**Hull, C. L. H.**, 5 of 138), “The JCMT BISTRO Survey: Magnetic fields associated with a network of filaments in NGC 1333,” 2020, *ApJ*, 899, 28 [ADS]
1 citation
36. Arce-Tord, C. *et al.* (**Hull, C. L. H.**, 5 of 10), “Outflow, Cores and Magnetic Field Orientations in W43-MM1 as seen by ALMA,” 2020, *A&A*, 640, 111 [ADS]
35. Lin, Z.-Y. D. *et al.* (**Hull, C. L. H.**, 6 of 6), “Validating Scattering-Induced (Sub)millimeter Disk Polarization through the Spectral Index and the Polarization Spectrum: The Case of HD 163296,” 2020, *MNRAS*, 496, 169 [ADS]
34. Myers, P. C. *et al.* (**Hull, C. L. H.**, 6 of 6), “Magnetic Field Structure in Spheroidal Star-Forming Clouds. II. Estimating Field Structure from Observed Maps,” 2020, *ApJ*, 896, 163 [ADS]
33. Laskar, T., **Hull, C. L. H.**, and Cortés, P. C., “Radio linear polarization of GRB afterglows: instrumental systematics in ALMA observations of GRB 171205A,” 2020, *ApJ*, 895, 64 [ADS]
32. **Hull, C. L. H.** *et al.*, “Understanding the origin of the magnetic field morphology in the wide-binary protostellar system BHR 71,” 2020, *ApJ*, 892, 152 [ADS]
31. Tychoniec, Ł., **Hull, C. L. H.**, *et al.*, “Chemical and kinematic structure of extremely high-velocity molecular jets in the Serpens Main star-forming region,” 2019, *A&A*, 632, 101 [ADS]
30. Le Gouellec, V. J. M., **Hull, C. L. H.**, *et al.*, “Characterizing magnetic field morphologies in three Serpens protostellar cores with ALMA,” 2019, *ApJ*, 885, 106 [ADS]
29. Cortés, P. C., **Hull, C. L. H.**, *et al.*, “The seven most massive clumps in W43-Main as seen by ALMA: dynamical equilibrium and magnetic fields,” 2019, *ApJ*, 884, 48 [ADS]
28. **Hull, C. L. H.** *et al.*, “ALMA observations of polarization from dust scattering in the IM Lup protoplanetary disk,” 2018, *ApJ*, 860, 82 [ADS]
27. Stephens, I. *et al.* (**Hull, C. L. H.**, 8 of 13), “ALMA Reveals Transition of Polarization Pattern with Wavelength in HL Tau’s Disk,” 2017, *ApJ*, 851, 55 [ADS]

26. **Hull, C. L. H.** *et al.*, “ALMA observations of dust polarization and molecular line emission from the Class 0 protostellar source Serpens SMM1,” 2017, *ApJ*, 847, 92 [ADS]
25. **Hull, C. L. H.** *et al.*, “Unveiling the Role of the Magnetic Field at the Smallest Scales of Star Formation,” 2017, *ApJL*, 842, 9 [ADS] [press release]
24. Lee, J. W. Y., **Hull, C. L. H.**, and Offner, S. R., “Synthetic Observations of Magnetic Fields in Protostellar Cores,” 2017, *ApJ*, 834, 201 [ADS]
23. **Hull, C. L. H.**, Girart, J. M., and Zhang, Q., “880 μm SMA polarization observations of the quasar 3C 286,” 2016, *ApJ*, 830, 124 [ADS]
22. Cortes, P. C., Girart, J. M., **Hull, C. L. H.**, *et al.*, “Interferometric mapping of magnetic fields: The ALMA view of the massive star forming clump W43-MM1,” 2016, *ApJL*, 825, 15 [ADS]
21. Nagai, H. *et al.* (**Hull, C. L. H.**, 4 of 9), “ALMA Science Verification Data: Millimeter Continuum Polarimetry of the Bright Radio Quasar 3C 286,” 2016, *ApJ*, 824, 132 [ADS]
20. **Hull, C. L. H.** *et al.*, “An extremely high velocity molecular jet surrounded by an ionized cavity in the protostellar source Serpens SMM1,” 2016, *ApJL*, 823, 27 [ADS]
19. Houde, M., **Hull, C. L. H.**, *et al.*, “Dispersion of Magnetic Fields in Molecular Clouds. IV — Analysis of Interferometry Data,” 2016, *ApJ*, 820, 38 [ADS]
18. **Hull, C. L. H.** and Plambeck, R. L., “The 1.3 mm Full-Stokes Polarization System at CARMA,” 2015, *JAI*, 4, 1550005 [ADS]
17. Sabin, L., **Hull, C. L. H.**, *et al.*, “Millimeter polarisation of the protoplanetary nebulae CRL 618 and OH 231.8+4.2: A follow-up study with CARMA,” 2015, *MNRAS*, 449, 2368 [ADS]
16. Tobin, J. J. *et al.* (**Hull, C. L. H.**, 14 of 14), “The VLA Nascent Disk and Multiplicity (VANDAM) Survey of Perseus Protostars. Resolving the Sub-arcsecond Binary System in NGC 1333 IRAS2A,” 2015, *ApJ*, 798, 61 [ADS]
15. Davidson, J. A., Li, Z.-Y., **Hull, C. L. H.**, *et al.*, “Testing Magnetic Field Models for the Class 0 Protostar L1527,” 2014, *ApJ*, 797, 74 [ADS]
14. Wright, M. C. H., **Hull, C. L. H.**, *et al.*, “NGC 7538 IRS 1: Interaction of a polarized dust spiral and a molecular outflow,” 2014, *ApJ*, 796, 112 [ADS]
13. **Hull, C. L. H.** *et al.*, “TADPOL: A 1.3 mm Survey of Dust Polarization in Star-forming Cores and Regions,” 2014, *ApJS*, 213, 13 [ADS]
12. Stephens, I. *et al.* (**Hull, C. L. H.**, 4 of 12), “The Magnetic Field Morphology of the Class 0 Protostar L1157-mm,” 2013, *ApJL*, 769, 15 [ADS]
11. **Hull, C. L. H.** *et al.*, “Misalignment of Magnetic Fields and Outflows in Protostellar Cores,” 2013, *ApJ*, 768, 159 [ADS]
10. Krumholz, M. R., Crutcher, R. M., and **Hull, C. L. H.**, “Protostellar Disk Formation Enabled by Weak, Misaligned Magnetic Fields,” 2013, *ApJL*, 767, 11 [ADS]
9. Hughes, A. M., **Hull, C. L. H.**, *et al.*, “Interferometric Upper Limits on Millimeter Polarization of the Disks around DG Tau, GM Aur, and MWC 480,” 2013, *AJ*, 145, 115 [ADS]
8. Zauderer, B. A. *et al.* (**Hull, C. L. H.**, 27 of 27), “Birth of a relativistic outflow in the unusual gamma-ray transient Swift J164449.3+573451,” 2011, *Nature*, 476, 425 [ADS]

7. Law, C. J. *et al.* (**Hull, C. L. H.**, 11 of 16), “Spectropolarimetry with the Allen Telescope Array: Faraday rotation toward bright polarized radio galaxies,” 2011, *ApJ*, 728, 57 [ADS]
6. **Hull, C. L. H.** *et al.*, “Primary-Beam Shape Calibration from Mosaicked, Interferometric Observations,” 2010, *PASP*, 122, 1510 [ADS]
5. Bower, G. C. *et al.* (**Hull, C. L. H.**, 28 of 53), “The Allen Telescope Array Pi GHz Sky Survey I. Survey Description and Static Catalog Results for the Boötes Field,” 2010, *ApJ*, 725, 1792 [ADS]
4. Croft, S. *et al.* (**Hull, C. L. H.**, 25 of 51), “The Allen Telescope Array Twenty-centimeter Survey — A 690-Square-Degree, 12-Epoch Radio Dataset — I: Catalog and Long-Duration Transient Statistics,” 2010, *ApJ*, 719, 45 [ADS]
3. Zasowski, G. *et al.* (**Hull, C. L. H.**, 6 of 7), “Spitzer Infrared Spectrograph Observations of Class I/II Objects in Taurus: Composition and Thermal History of the Circumstellar Ices,” 2009, *ApJ*, 694, 459 [ADS]
2. Watson, D. M., Bohac, C. J., **Hull, C.**, *et al.*, “The development of a protoplanetary disk from its natal envelope,” 2007, *Nature*, 448, 1026 [ADS]
1. Dubus, G., Taam, R. E., **Hull, C.**, Watson, D. M., *et al.*, “Spitzer Space Telescope Observations of the Magnetic Cataclysmic Variable AE Aquarii,” 2007, *ApJ*, 663, 516 [ADS]

UNREFEREED

- Hull, C. L. H.**, “High-dynamic-range 21 cm JVLA observations of the Perseus Cluster,” 2020, *IAUS 342 proceedings* [ADS]
- Cooray, A. *et al.* (**Hull, C. L. H.**, 22 of 38), “A NASA-led US Contribution to the ESA/JAXA SPICA Mission: Unveiling the Dust Obscured Universe,” 2019, *Astro2020: Decadal Survey on Astronomy and Astrophysics*, APC White Paper, [ADS]
- Fissel, L., **Hull, C. L. H.**, *et al.*, “Studying magnetic fields in star formation and the turbulent interstellar medium,” 2019, *Astro2020: Decadal Survey on Astronomy and Astrophysics*, Science White Paper, [ADS]
- Stephens, I. *et al.* (**Hull, C. L. H.**, 6 of 27), “Polarization in disks,” 2019, *Astro2020: Decadal Survey on Astronomy and Astrophysics*, Science White Paper, [ADS]
- Hull, C. L. H.** *et al.*, “Magnetic fields in forming stars with the ngVLA,” 2018, *Science with a Next Generation Very Large Array*, *ASP Conference Series*, 517, 357 [ADS]
- Tychoniec, Ł., **Hull, C. L. H.**, *et al.*, “Chemical and kinematic complexity of the very young star-forming region Serpens Main observed with ALMA,” 2017, *IAUS 332 proc.* [ADS]
- Kameno, S. *et al.* (**Hull, C. L. H.**, 16 of 29), “3C 279: ALMA detection of radio flare in total and polarized flux densities,” 2018, *The Astronomer’s Telegram*, No. 11572 [ADS]
- Hull, C. L. H.**, “How to Give a Great Talk,” 2017, *URSI Radio Science Bulletin*, No. 361, June 2017, pp. 75-79 [IEEE Xplore] [arXiv] [ADS]
- Isella, A., **Hull, C. L. H.**, *et al.*, “Next Generation Very Large Array Memo No. 6, Science Working Group 1: The Cradle of Life,” 2015, *ngVLA Memo Series*, 6 [ADS]
- Carilli, C. L. *et al.* (**Hull, C. L. H.**, 14 of 20), “Next Generation Very Large Array Memo No. 5: Science Working Groups — Project Overview,” 2015, *ngVLA Memo Series*, 5 [ADS]
- Hull, C. L. H.** and Plambeck, R. L., “The 1.3 mm Full-Stokes Polarization System at CARMA,” 2015, *CARMA Memo Series*, 64 [link]
- Hull, C. L. H.**, “From Cores to Envelopes to Disks: A Multi-scale View of Magnetized Star Formation,” 2014, Ph.D. Thesis, University of California, Berkeley [PDF] [ADS] [ProQuest]

- Hull, C. L. H.**, Plambeck, R. L., “Probing magnetic-field morphology in protostellar envelopes with the CARMA 1.3 mm dual-polarization receiver system,” 2014, in *General Assembly and Scientific Symposium, 2014 XXXIth URSI*, 1–4 [[IEEE Xplore](#)]
- Bauermeister, A. *et al.* (**Hull, C. L. H.**, 3 of 5), “Monitoring of Secondary Calibrator Fluxes at CARMA,” 2012, *CARMA Memo Series*, 59 [[link](#)]
- Hull, C. L. H.**, Plambeck, R., and Engargiola, G., “1 mm Dual-polarization Science with CARMA,” 2011, in *General Assembly and Scientific Symposium, 2011 XXXth URSI*, 1–4 [[IEEE Xplore](#)]
- Zauderer, B. A. *et al.* (**Hull, C. L. H.**, 7 of 7), “GRB 110328A / Swift J164449.3+573451: CARMA mm detection,” 2011, *GRB Coordinates Network*, Circular 11841 [[ADS](#)]
- Williams, P. K. G. *et al.* (**Hull, C. L. H.**, 16 of 31), “Training the Next Generation of Astronomers,” 2009, *astro2010: The Astronomy and Astrophysics Decadal Survey*, Position Paper 65 [[ADS](#)]

PRESENTATIONS

INVITED TALKS		
	EPOS 2020, Ringberg Castle, Germany (review talk)	Postponed
	Rice University, Houston, TX [video]	3 Feb 2021
	American Astronomical Soc. 236 th mtg., virtual	2 Jun 2020
	Instituto de Astronomía (IA), UNAM, Mexico	22 May 2020
	Sultan Qaboos University, Muscat, Oman	13 May 2020
	Allegro ARC Node, Leiden Obs., Netherlands	6 May 2020
	ALMA 2019, Cagliari, Sardinia, Italy	15 Oct 2019
	Pontificia Universidad Católica de Chile, Santiago, Chile	1 Oct 2019
	UT Austin, Beatrice M. Tinsley Scholar, Austin, TX	10, 11 Sep 2019
	Universidad de Chile, Santiago, Chile	20 Jun 2019
	Universidad de Valparaíso, Valparaíso, Chile	22 Nov 2018
	“Cosmic Dust & Magnetism” meeting, KASI, Daejeon, South Korea	31 Oct 2018
	University of Wisconsin, Madison, WI	26 Apr 2018
	Universidad de Concepción, Concepción, Chile	6 Apr 2018
	Symposium in honor of Pierre Cox, Vitacura, Santiago, Chile	27 Mar 2018
	“Magnetic fields or turbulence?” meeting, Hsinchu, Taiwan	6 Feb 2018
	Joint ALMA Observatory, Vitacura, Santiago, Chile	7 Dec 2017
	NAOJ, Mitaka, Japan	22 Sep 2017
	NRAO (CV), Charlottesville, VA	1 Feb 2017
	MPIfR, Bonn, Germany	14 Nov 2016
	University of Oklahoma, Norman, OK	27 Oct 2016
	Brown University, Providence, RI	20 Oct 2016
	Fellows at the Fontiers, Northwestern University, Evanston, IL	1 Sep 2016
	University of Western Ontario, London, ON, Canada	19 May 2016
	Florida State University, Tallahassee, FL	23 Feb 2016
	15 Años de Ciencia con Gemini en Argentina, La Plata, Argentina	2 Jun 2015
	Instituto Argentino de Radioastronomía, La Plata, Argentina	1 Jun 2015
	Joint ALMA Observatory, Vitacura, Santiago, Chile	20 May 2015
	Herzberg Institute of Astrophysics, Victoria, B.C., Canada	28 Apr 2015
	Dominion Radio Astronomical Observatory, Penticton, B.C., Canada	27 Apr 2015
	University of Minnesota, Minneapolis, MN	24 Apr 2015
	NRAO (NM), Socorro, NM	13 Feb 2015
	NAOC, Beijing, China	15 Aug 2014
	ASTROPOL 2014, Grenoble, France	27 May 2014
	Space Sciences Laboratory, Berkeley, CA	14 Feb 2014

	University of Rochester, Rochester, NY	26 Nov 2013
	Rochester Institute of Technology, Rochester, NY	22 Nov 2013
	NRAO/University of Virginia, Charlottesville, VA	25 Sep 2013
	Instituto de Astronomía, UNAM, Mexico City, Mexico	11 Sep 2013
	Centro de Radioastronomía y Astrofísica, UNAM, Morelia, Mexico	5 Sep 2013
	University of Illinois at Urbana-Champaign, Urbana, IL	10 Jul 2013
	SETI Institute, Mountain View, CA [video]	26 Feb 2013
	SOFIA Science Center, NASA Ames, Mountain View, CA	23 May 2012
	<i>+9 invitations in 6 countries, declined due to scheduling conflicts</i>	
SUMMER SCHOOLS	Green Bank Interferometry School, Green Bank, WV (talk)	14 July 2015
SELECTED TALKS & POSTERS	American Astronomical Soc. 237 th mtg., virtual (talk)	13 Jan 2021
	The Magnetic Field Awakens, virtual (talk)	3 Dec 2020
	NAOJ ALMA-J seminar, Mitaka, Japan (talk)	14 Jan 2020
	American Astronomical Soc. 235 th mtg., Honolulu, HI (poster)	6 Jan 2020
	IIEEC-CSIC, Barcelona, Catalonia (talk)	8 Nov 2019
	STARPLAN, Copenhagen, Denmark (talk)	4 Nov 2019
	ESO disk/planet workshop, Santiago, Chile (talk)	29 Jan 2019
	American Astronomical Soc. 233 rd mtg., Seattle, WA (poster)	9 Jan 2019
	SOCHIAS annual meeting, La Serena, Chile (poster)	10 Oct 2018
	IAU XXX GA, incl. FM4 & Division H day, Vienna, Austria (poster)	27 Aug 2018
	IAU Symposium 342: The Perseus Cluster, Noto, Sicily, Italy (talk)	15 May 2018
	American Astronomical Soc. 231 st mtg., National Harbor, MD (iPoster)	10 Jan 2018
	<i>+81 more talks & posters from 2005–2017</i>	
ADVISING	Joint ALMA Observatory, Santiago, Chile	
	<i>Bo Huang, Ph.D. student</i>	2021–
	Bo is a Ph.D. student at IIEEC-CSIC in Barcelona working with me and co-adviser Josep Miquel Girart on magnetic fields in young protostellar cores.	
	<i>Valentin Le Gouellec, master's & Ph.D. student</i>	2018–
	Valentin started as an aerospace engineering master's student at ISAE Supaero (France) working with me on using ALMA data to map magnetic fields at ~ 30 au resolution in low-mass protostellar cores. He is now a Ph.D. student funded by the ESO studentship program, and is co-advised by me and Anaëlle Maury (CEA Saclay). Published papers: [ADS] and [ADS]. Award: 2018 prize for the best thesis (ISAE Supaero).	
	<i>Aquiles den Braber González, Católica, undergraduate</i>	2021
	Aquiles is an REU student funded through the NRAO REU-Chile Program who worked with me and co-supervisor Paulo Cortés (Scientist at ALMA) on ALMA polarization data.	
	<i>Daniela Rojas, Universidad Andrés Bello, undergraduate</i>	Jan – Mar 2020
	Daniela was an REU student funded through the NRAO REU-Chile Program who worked with me and co-supervisor Paulo Cortés (Scientist at ALMA) on ALMA polarization data.	
	<i>Jaime Giannelloni, Universidad Andrés Bello, undergraduate</i>	Jan – Mar 2020
	Jaime was an REU student funded through the NRAO REU-Chile Program who worked with me and co-supervisor Paulo Cortés (Scientist at ALMA) on ALMA polarization data.	

Carlos Orquera, Universidad Católica del Norte, undergraduate Jan – Sep 2018

Carlos was an REU student funded through the NRAO REU-Chile Program who worked with me and co-supervisor Paulo Cortés (Scientist at ALMA) on his undergraduate thesis entitled, “Mapping the magnetic field in the remarkable W43 high-mass star-forming region.”

Harvard-Smithsonian Center for Astrophysics, Cambridge, MA

Joyce Lee, Southampton (UK), master’s student August 2015 – May 2016

Joyce worked on a project comparing CARMA polarization observations of protostars with synthetic observations of star-formation simulations from Stella Offner (co-adviser, astronomy professor at UMass Amherst). Thesis title: “Synthetic Observations of Magnetic Fields in Protostellar Cores.” Published paper: [ADS]. **Award:** 2018 STAG Prize (Southampton) for best theoretical astrophysics paper.

TEACHING

UC Berkeley, Astronomy Dept. & Radio Astronomy Laboratory, Berkeley, CA

Co-instructor

– AY 250: Radio 101, Intro to Radio Astronomy (graduate seminar) Fall 2010

Graduate student instructor

– AY C10: Introductory Astronomy for Non-majors (undergraduate) Fall 2009

– AY 7A: Introductory Astronomy for Majors (undergraduate) Fall 2008

iFly SF Bay, Union City, CA

Physics lecturer: taught physics at a skydiving tunnel Summer 2011

Independent physics tutor, Berkeley, CA

Tutored high school and college students in physics 2009–2013

Woodberry Forest School, Woodberry Forest, VA

Faculty member: taught AP, general, freshman, & research physics Fall ’06, Spring ’08

Yinhatil Nab’en School, San Mateo Ixtatán, Huehuetenango, Guatemala

Faculty member: taught secondary-level math, physics, and music 2007

University of Virginia, Athletics Dept., Charlottesville, VA

Tutor: tutored UVa athletes in Calculus 2003–2006

PROFESSIONAL **Time Allocation Committees**

SERVICE

ALMA, SOFIA, CFHT, SMA, and JCMT.

Review panels

Participated in the review process for an NSF program, an ERC program, a SOFIA Legacy Program, the ALMA North American Development Program, and the ALMA JAO Visitor Funding committee.

Referee experience

Nature, Nature Astronomy (Nat. Astron.), Nature Communications (Nat. Commun.), Astrophysical Journal (ApJ), Astrophysical Journal Letters (ApJL), Monthly Notices of the Royal Astronomical Society (MNRAS), Astronomy & Astrophysics (A&A), Astronomy & Astrophysics Letters (A&AL), Astrophysics & Space Science (Ap&SS), Galaxies.

LMT TolTEC collaboration

2016–

I am a collaborator on the TolTEC project to build an imaging polarimeter for the Large Millimeter Telescope in Mexico. TolTEC was funded by an NSF MSIP grant in 2017.

ALMA polarization calibration 2015–

Team member: assisting with further commissioning of the ALMA polarization system, along with other members of the Extension and Optimization of Capabilities (EOC) team. Member of the Cycle 5 ALMA Development Study, “Full-Mueller Mosaic Imaging with ALMA” (PI: S. Bhatnagar).

Origins Space Telescope (OST) science working group 2016–2019

I am a member of the “Milky Way, ISM, and Nearby Galaxies” science working group, which is one of five groups drafting science goals for the future Origins Space Telescope mission. I co-led the science case on galactic magnetic fields and polarization.

Next Generation VLA (ngVLA) science working groups 2014–2019

I was an internal (NRAO) co-chair and organizer of the “Cradle of Life” working group, which proposed science cases for the ngVLA; I was a coauthor of a white paper summarizing the working group’s findings. I was also the primary author of a chapter in the compendium, *Science with a Next Generation Very Large Array*.

Conference organization

- Focus Meeting 4 at the IAU GA (SOC co-chair), Vienna, Austria 30–31 Aug 2018
- ALMA/ESO Science Day, Vitacura, Santiago, Chile 15 Dec 2017
- CARMA Science Symposium (SOC), Chicago, IL 7–9 Jul 2013
- CARMA Science Symposium (LOC), Berkeley, CA 28 Feb – 1 Mar 2011

Jefferson Scholars selection committee, Charlottesville, VA 2015, 2016

Committee member: interviewed and selected candidates for the Jefferson Fellowship at the University of Virginia.

CfA undergraduate-thesis reader, Cambridge, MA 2016

External reader: read and critiqued a Harvard undergraduate astronomy thesis.

Postdoc Council, Cambridge, MA 2015–2017

Council member: organize events for the Harvard/CfA postdoc community.

Mentoring program, UC Berkeley Astronomy Dept., Berkeley, CA 2010–2013

Mentor master: co-leader of the graduate mentoring program.

SCIENCE
COMMUNICATION

- PUBLIC LECTURES**
- ALMA APG General Talk, Santiago, Chile 17 Feb 2021
 - International Association of Physics Students conference, virtual 3 Sep 2020
 - ALMA OSF, San Pedro de Atacama, Chile 16 Jul 2019
 - Cape Cod Astronomical Society, South Yarmouth, MA 3 Nov 2016
 - Cambridge Science Festival, Cambridge, MA 24 Apr 2016
 - U.S. Invitational Young Physicists Tournament, Woodberry Forest, VA 30 Jan 2015
 - Mt. Tam Astronomy Program, Mount Tamalpais State Park, CA 6 Apr 2014
 - Wonderfest “New Science Smorgasbord,” San Francisco, CA [video] 11 Dec 2013
 - Wonderfest “Science-Comedy Improv Blitz,” San Francisco, CA [video] 1 Nov 2013
 - Charlottesville Astronomical Society, Charlottesville, VA (webinar) 7 Aug 2013
 - Epworth United Methodist Church, Berkeley, CA 23 Mar 2013
 - UC Berkeley Physics Dept. “Launch Day,” Berkeley, CA 21 Aug 2012
 - Peninsula Astronomical Society, Los Altos Hills, CA 10 Aug 2012
 - Cerro Coso Community College, Bishop, CA 10 Nov 2011
 - East Bay Astronomical Society, Oakland, CA 27 Nov 2010

WORKSHOPS

Wonderfest, San Francisco Bay Area, CA

Sep 2013 – Jan 2014

Science Envoy

- Member of the inaugural class of eight Envoys from Berkeley and Stanford
- Engaged in monthly science communication workshops
- Spoke at public Wonderfest events

Science communication workshop with Alan Alda, Stanford, CA 16–18 Jan 2014

Workshop by the Alan Alda Center for Communicating Science. Included media training, improvisation, and other techniques designed to improve scientists' abilities to communicate successfully in challenging settings. Here is a recording of me engaging in a (challenging!) mock interview during the workshop: [\[video\]](#)

FameLab, Berkeley, CA

7 Dec 2012

Science communication workshop followed by a three-minute public speaking competition in front of a live audience.

POPULAR
ARTICLES**“How to Give a Great Talk”**

Dec 2017

Wrote an article about how to give great scientific presentations, which appeared in the “Early Career Representative Column” of the URSI Radio Science Bulletin. The article can be found here [\[IEEE Xplore\]](#) and here [\[arXiv\]](#).

Centurion Magazine

Oct 2015

Was interviewed for an article about ALMA and star formation. The article is available in French [\[PDF\]](#) and German [\[PDF\]](#).

Berkeley Science Review, UC Berkeley, Berkeley, CA

Apr 2009

Wrote a “Labscope” article on Austin Roorda’s UC Berkeley Vision Science lab. The BSR is a graduate-student-run publication covering science and technology at Berkeley. [\[PDF\]](#)

Chronicle Express, Penn Yan, NY

Sep 2007

Wrote a public article for the *Chronicle Express*, Penn Yan’s local paper, describing research I did as a summer researcher at the University of Rochester; the results were later published in *Nature* and the *Astrophysical Journal*. [\[PDF\]](#)

OTHER
EXPERIENCE**Explora La Araucanía**

2020

Gave online workshops (in Spanish) for schools in the Araucanía Region as part of the “Una Escuela Un@ Astrónom@” (“One School One Astronomer”) outreach program leading up to the 2020 total solar eclipse in Southern Chile. [\[video\]](#)

ALMA animated video series

2019

Performed the English voice-over for Season 2 of the, “Why Astronomers Want to Use ALMA” animated video series. [\[video\]](#)

U.S. Association for Young Physicists Tournaments*Board member*

2014–2017

U.S. Invitational Young Physicists Tournament

<i>Head Juror</i> (University of the Sciences, Philadelphia, PA)	28–29 Jan 2017
<i>Head Juror</i> (Randolph College, Lynchburg, VA)	29–30 Jan 2016
<i>Head Juror</i> (Woodberry Forest School, Woodberry Forest, VA)	30–31 Jan 2015
<i>Juror</i> (Harker School, San Jose, CA)	31 Jan – 1 Feb 2014
<i>Juror</i> (Harker School, San Jose, CA)	1–2 Feb 2013
<i>Team co-leader (WFS)</i> (NC School of Science & Math, Durham, NC)	8–9 Feb 2008

“Strip the Cosmos” documentary filming, CARMA, Cedar Flat, CA 30 Jul 2014

Consulted with producers and was filmed on-site at CARMA for a segment on star formation in the “Inside the Sun” episode. The United States premiere was on 19 Nov 2014 on the *Science* channel. [video] [IMDB]

WFS capital campaign celebration, Woodberry Forest, VA 9 Nov 2012

Invited to speak about the importance of the science program at Woodberry Forest; the event marked the successful completion of the school’s most recent capital campaign.

Communicating with Washington, Washington, DC 8–9 May 2012

Lobbied on behalf of the AAS.

Consultant for TV show “Castle,” Los Angeles, CA Nov 2011

Consulted with the producers of the TV show “Castle” about an episode involving radio astronomy, telescopes, satellites, and data collection. [IMDB]

OBSERVING EXPERIENCE

ALMA, San Pedro de Atacama, Chile

Astronomer on Duty (AoD): Periodically work 8-day AoD observing shifts at the ALMA Observing Support Facility.

SMA, Mauna Kea, HI

Visiting observer: accompanied the SMA telescope operator during the 12–17 Nov 2015 observing shift.

CARMA, Cedar Flat, CA

Observing: responsibilities during week-long shifts include taking science data for other astronomers, communicating with staff and scientists across the CARMA consortium, controlling the telescope, protecting the telescope during inclement weather, and being on call to troubleshoot problems 24 hours per day. **90+ days** from 2010–2014.

Hardware: assisted in the building, testing, installation, calibration, upgrading, and maintenance of the 1 mm dual-polarization receiver system at CARMA. **30+ days** from 2010–2014.

Software and array support: developed and maintain several software programs, including one that fits geometric delays after array changes, and several that allow for calibration and monitoring of polarization observations.

Observer scheduling: responsible for scheduling all week-long observer shifts, maintaining the observer database, and communicating with PIs and observers within and outside of the CARMA consortium.

- MISCELLANY **NRAO Image Contest** 2020
- My ALMA colleague Marie-Lou Gendron-Marsolais and I won third place in the NRAO image contest celebrating the 40th anniversary of the Karl G. Jansky Very Large Array (VLA). Our submission featured a composite VLA and Sloan Digital Sky Survey image showing radio jets from the galaxy NGC 1272 in the Perseus galaxy cluster. [[press release](#)] [[media \(French\)](#)]
- Smithsonian Staff Photo Contest, Washington, DC** 2015, 2017
- My photos “Autumn Love” [JPG] and “Bath time” [JPG] won second place in the “Non-Smithsonian people” (2015) and “Non-Smithsonian objects” (2017) categories, respectively. Both photos were featured in exhibitions in the Ripley Center in Washington, DC.
- REFERENCES Available upon request.