

## Meredith A. MacGregor

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CONTACT INFORMATION	5241 Broad Branch Road Washington, D.C. 20015 Office: R260B	(720) 989-5691 mmacgregor@carnegiescience.edu <a href="https://www.cfa.harvard.edu/~mmacgregor">https://www.cfa.harvard.edu/~mmacgregor</a>
RESEARCH INTERESTS	Circumstellar disk structure and evolution Radio interferometry	Planetary system formation Aperture synthesis techniques
EDUCATION	<b>Harvard University</b> , Cambridge, MA  Ph.D., Astronomy and Astrophysics, May 2017 <ul style="list-style-type: none"><li>• Thesis Title: ‘Millimeter Studies of Nearby Debris Disks’</li><li>• Advisor: Dr. David J. Wilner</li></ul> M.A., Astronomy and Astrophysics, May 2013 <b>Harvard University</b> , Cambridge, MA  B.A., Astronomy and Astrophysics, Physics, June 2011 <ul style="list-style-type: none"><li>• <i>Cum Laude</i></li><li>• Thesis Topic: A Search for Fast Optical Transients</li><li>• Advisor: Prof. Edo Berger</li></ul>	
ACADEMIC POSITIONS	<b>NSF Postdoctoral Fellow, Carnegie Fellow</b> Department of Terrestrial Magnetism (DTM) Carnegie Institution for Science <b>Postdoctoral Researcher</b> Harvard-Smithsonian Center for Astrophysics <b>Graduate Research Assistant</b> Dept. of Astronomy, Harvard University Advisor: Dr. David J. Wilner <b>Undergraduate Research Assistant</b> Dept. of Astronomy, Harvard University Advisor: Prof. Edo Berger <b>NSF REU</b> National Radio Astronomy Observatory Advisor: Dr. Jeffery G. Mangum <b>NSF REU</b> Maria Mitchell Observatory Advisor: Dr. Vladimir Strel'nitski	Sept. 2017 – present  June 2017 – Sept. 2017  Sept. 2011 – May 2017  Dec. 2009 – June 2011  May 2010 – Aug. 2010  May 2009 – Aug. 2009
AWARDS	Fellowships and Scholarships <ul style="list-style-type: none"><li>• NSF Astronomy and Astrophysics Postdoctoral Fellowship</li><li>• Carnegie Postdoctoral Fellowship, Carnegie DTM</li><li>• Jansky Postdoctoral Fellowship (declined)</li><li>• John P. And Carol J. Merrill Graduate Fellowship</li><li>• National Science Foundation Graduate Research Fellowship</li><li>• Smith Family Graduate Science and Engineering Fellowship</li><li>• Intel Science Talent Search Scholarship</li><li>• Micron Science and Technology Scholarship</li><li>• USA Today All-USA High School Academic Scholarship</li><li>• National Merit Scholarship</li><li>• Intel Foundation Young Scientist Scholarship</li></ul>	2017 2017 2017 2013 2011 2011 2007 2007 2007 2007 2006

	• Office of Naval Research Scholarship	2005
	Teaching Awards —Harvard University	
	• Certificate of Distinction in Teaching (Astronomy 201b)	2015
	• Bok Center Teaching Certificate	2014
	• Certificate of Distinction in Teaching (Astronomy 17)	2012
	• Certificate of Distinction in Teaching (Astronomy 16)	2012
	Student Awards —Harvard University, Dept. of Astronomy	
	• Goldberg Award for Outstanding Senior Thesis	2011
	• Goldberg Award for Outstanding Junior Thesis	2010
ACCEPTED OBSERVING PROPOSALS (AS PI)	13. <i>Probing Planet-Disk Interactions in the Fomalhaut System</i> 6.4 hours; ALMA Cycle 5 B-Priority; ID: 2017.1.01043.S	07/2017
	12. <i>Debris Disk Structure Around Nearby Sun-like Stars with the ACA</i> 14.5 hours; ALMA Cycle 5 C-Priority; ID: 2017.1.01054.S	07/2017
	11. <i>Debris Disk Structure Around Nearby Sun-like Stars with the ACA</i> 14.5 hours; ALMA Cycle 4 Filler; ID: 2016.2.00015.S	05/2017
	10. <i>Debris Disks Around Tau Ceti and Epsilon Eridani</i> 17.7 hours; ALMA Cycle 4 C-Priority; ID: 2016.1.00803.S	08/2016
	9. <i>Structure of the 56 Aur Debris Disk</i> 4 tracks; SMA B-Ranked; ID: 2015B-S014	10/2015
	8. <i>Structure of the HD 32297 Debris Disk</i> 2 tracks; SMA A-Ranked; ID: 2014B-S001	10/2014
	7. <i>Deciphering Debris Disk Structure and Eccentricity</i> 2 tracks; SMA B-Ranked; ID: 2014A-S051	05/2014
	6. <i>Structure in the eps Eridani Debris Disk</i> 48 hours; ATCA A-Ranked; ID: C2931	04/2014
	5. <i>Constraining Collisional Models of Planetesimals in Debris Disks</i> 28 hours; VLA A- and B-Ranked; ID: 14A-225	11/2013
	4. <i>Constraining the Structure and Eccentricity of Debris Disks</i> 3 tracks; SMA B-Ranked; ID: 2013B-S049	11/2013
	3. <i>Structure of the HD 15115 Debris Disk</i> 2 tracks; SMA A-Ranked; ID: 2013A-S024	05/2013
	2. <i>Testing Collisional Models of Planetesimals in the AU Mic Debris Disk</i> 2.5 hours; VLA A-Ranked; ID: 13A-301	11/2012
	1. <i>Resolving Millimeter Emission from the q1 Eri Debris Disk</i> 2.6 hours; ALMA Cycle 1 B-Priority; ID: 2012.1.00112.S	11/2012
INVITED TALKS, SEMINARS, AND COLLOQUIA	SMA Special Session at 231st AAS Meeting, Washington, D.C.	2018
	Caltech Astronomy Colloquium, Pasadena, CA	2017
	Berkeley CIPS Seminar, Berkeley, CA	2016
	NASA Goddard Exoplanet Seminar, Greenbelt, MD	2016
	Carnegie DTM Friday Seminar, Washington, D.C.	2016
	NOAO Friday Lunch Talk, Tucson, AZ	2016
	NRAO TUNA Lunch Talk, Charlottesville, VA	2016
	MIT Planetary Lunch Colloquium, Cambridge, MA	2016
	CfA Stars & Planets Seminar, Cambridge, MA	2016
	Boston University Lunch Talk, Boston, MA	2016
	NASA Far-IR SIG Meeting, 227th AAS Meeting, Kissimmee, FL	2016
	SMA Science Meeting, Cambridge, MA	2015

Banneker Institute CASA Seminar, Cambridge, MA	2015
SMA Lunch Talk, Hilo, Hawaii	2015
NRAO Lunch Talk, Socorro, NM	2014
Swinburne University Colloquium, Melbourne, Australia	2014

CONFERENCE  
CONTRIBUTIONS

13. *A Complete ALMA Map of the Fomalhaut Debris Disk* (talk)  
Gordon Research Seminar: Origins of Solar Systems, 2017, South Hadley, MA
12. *A Complete ALMA Map of the Fomalhaut Debris Disk* (poster)  
Gordon Research Conference: Origins of Solar Systems, 2017, South Hadley, MA
11. *Millimeter Studies of Nearby Debris Disks* (dissertation talk)  
American Astronomical Society Meeting #229, 2017, Grapevine, TX
10. *ALMA Observations of the GQ Lup System* (talk)  
ESO ‘Resolving planet formation in the era of ALMA and extreme AO’ Conference, 2016, Santiago, Chile
9. *Constraining Collisional Models of Planetesimals in Debris Disks* (talk)  
American Astronomical Society Meeting #227, 2016, Kissimmee, FL
8. *Constraining Collisional Models of Planetesimals in Debris Disks* (poster)  
Gordon Conference: Origins of Solar Systems, 2015, South Hadley, MA
7. *A New Millimeter Look at the HD 15115 Debris Disk* (poster)  
American Astronomical Society Meeting #224, 2014, Boston, MA
6. *A New Millimeter Look at the HD 15115 Debris Disk* (poster)  
SMA: First Decade of Discovery, 2014, Cambridge, MA
5. *A Resolved Millimeter Emission Belt in the AU Mic Debris Disk* (talk)  
IAU Symposium: Exploring the Formation and Evolution of Planetary Systems, 2013, Victoria, Canada
4. *Millimeter Emission Structure in the AU Mic Debris Disk* (talk)  
2013 Rocks! Transformational Science with ALMA: From Dust to Rocks to Planets, 2013, Kona, Hawaii
3. *Measuring CMB Temperature with an Inexpensive, Student Lab Experiment* (talk)  
USNC-URSI National Radio Science Meeting, 2012, Boulder, CO
2. *Densitometry and Thermometry of Starburst Galaxies* (poster)  
American Astronomical Society Meeting #217, 2011, Seattle, WA
1. *Variations of Physical Conditions in the Cores of Molecular Clouds as Probed by  $J_0-J_{-1}$  Methanol Lines at 157 GHz* (poster)  
American Astronomical Society Meeting #215, 2010, Washington, D.C.

TEACHING AND  
ADVISING

<b>Undergraduate Mentor</b>	Summer 2017
Elizabeth Gutierrez (University of Texas at Austin)	
Banneker Institute, Harvard University	
‘Radio Interferometry: Uncovering Hidden Star Formation in our Extreme Galactic Center’	
presented at Harvard University, 231st AAS Meeting (Winter 2018)	
<b>Undergraduate Mentor</b>	Summer 2016
Rachel Gilchrist (Harvard)	
Banneker Institute, Harvard University	
‘Modeling the Surface Brightness Distribution of a Debris Disk’	
presented at Harvard University	

**Teaching Fellow** Spring 2015  
Astronomy 201b - The Physics and Chemistry of the Interstellar Medium  
with Prof. Karin Oberg  
Astronomy Department,  
Harvard University

**Teaching Fellow** Fall 2012  
Astronomy 17 - Galactic and Extragalactic Astronomy  
with Prof. Daniel Eisenstein  
Astronomy Department,  
Harvard University

**Teaching Fellow** Spring 2012  
Astronomy 16 - Stellar and Planetary Astronomy  
with Prof. David Charbonneau  
Astronomy Department,  
Harvard University

PROFESSIONAL  
SERVICE

Gordon Research Seminar Origins of Solar Systems Chair (elected 2017 for 2019 conference)  
NASA Review Panel (2017)  
Origins Space Telescope Disks and Planet Formation Working Group (2017 – present)  
Member of NASA Far-IR SIG Leadership Council (2016 – present)  
Referee for *MNRAS* (2016 – present), *ApJ* (2017 – present)  
Local organizing committee for APS CUWiP at Harvard (2015 – present)  
Judge for Chambliss student poster award at AAS (2015 – present)  
Astronomy graduate retreat committee (2014 – 2015)  
Mentor to first-year graduate students (2014 – 2015)  
Organizer of graduate prospective weekend (2013)  
Mentor to undergraduate women in science (2011 – 2014)

OUTREACH

**WorldWide Telescope Ambassador** Jan. 2013 – present  
• Designed an interactive kiosk for the Harvard Science Center to introduce students and the public to astronomy at Harvard  
• Taught a curriculum on the phases of the moon to students at Clarke Middle School in Lexington, MA  
• Participated in many outreach events including the Cambridge Science Festival and U.S. Science and Engineering Festival

**Nonresident tutor in Pforzheimer House** Sept. 2014 – 2017  
• Organized weekly help sessions for undergraduates taking physics/astrophysics courses

**Cambridge Science Festival Volunteer** April 2012 – 2017  
• Presented astronomy to the public at the yearly event in Cambridge, MA

**The Scientista Foundation Boston Regional Officer** Sept. 2011 – Sept. 2013  
• Organized networking events for undergraduate and graduate students in the sciences in the Boston area

**Science Club for Girls Mentor** Sept. 2009 – Dec. 2014  
• Taught an after school science program for K-6 girls at the Amigos School in Cambridge, MA  
• Founded a Harvard Chapter of the organization and helped recruit new volunteers

*First Author:*

7. *A Complete ALMA Map of the Fomalhaut Debris Disk*  
**M. A. MacGregor**, L. Matrà, P. Kalas, D. J. Wilner, M. Pan, G. M. Kennedy, M.C. Wyatt, G. Duchene, A. M. Hughes, G. H. Rieke, M. Clampin, M. P. Fitzgerald, J. R. Graham, W. S. Holland, O. Panić, A. Shannon, K. Y. L. Su  
Astrophysical Journal, 842, 8, 2017 (arXiv:1705.05867)
6. *ALMA Measurements of Circumstellar Material in the GQ Lup System*  
**M. A. MacGregor**, D. J. Wilner, I. Czekala, S. M. Andrews, Y. S. Dai, G. J. Herczeg, K. M. Kratter, A. L. Kraus, L. Ricci, L. Testi  
Astrophysical Journal, 835, 17, 2017 (arXiv:1611.06229)
5. *ALMA Observations of the Debris Disk of Solar Analogue Tau Ceti*  
**M. A. MacGregor**, S. M. Lawler, D. J. Wilner, B. C. Matthews, G. M. Kennedy, M. Booth, J. Di Francesco  
Astrophysical Journal, 828,113, 2016 (arXiv:1607.02513)
4. *Constraints on Planetesimal Collision Models in Debris Disks*  
**M. A. MacGregor**, D. J. Wilner, C. Chandler, L. Ricci, S. T. Maddison, S. R. Cranmer, S. M. Andrews, A. M. Hughes, A. Steele  
Astrophysical Journal, 823, 79, 2016 (arXiv:1603.05644)
3. *The Epsilon Eridani System Resolved by Millimeter Interferometry*  
**M. A. MacGregor**, D. J. Wilner, S. M. Andrews, J.-F. Lestrade, S. Maddison  
Astrophysical Journal, 809, 47, 2015 (arXiv:1507.01642)
2. *Resolved Millimeter Emission from the HD 15115 Debris Disk*  
**M. A. MacGregor**, D. J. Wilner, S. M. Andrews, A. M. Hughes  
Astrophysical Journal, 801, 59, 2015 (arXiv:1501.05962)
1. *Millimeter Emission Structure in the First ALMA Image of the AU Mic Debris Disk*  
**M. A. MacGregor**, D. J. Wilner, K. A. Rosenfeld, S. M. Andrews, B. Matthews, A. M. Hughes, M. Booth, E. Chiang, J. R. Graham, P. Kalas, G. Kennedy, B. Sibthorpe  
Astrophysical Journal Letters, 762, L21, 2013 (arXiv:1211.5148)

*Co-Author:*

10. *Review: Far-Infrared Instrumentation and Technology Development for the Next Decade*  
D. Farrah, K. E. Smith, D. Ardila, C. M. Bradford, M. Dipirro, C. Ferkinhoff, J. Glenn, P. Goldsmith, D. Leisawitz, T. Nikola, N. Rangwala, S. A. Rinehart, J. Stagnuhn, M. Zemcov, J. Zmuidzinas, J. Bartlett, S. Carey, W. J. Fischer, J. Kamenetzky, J. Kartaltepe, M. Lacy, D. C. Lis, E. Lopez-Rodriguez, **M. MacGregor**, S. H. Moseley, E. J. Murphy, A. Rhodes, M. Richter, D. Rigopoulou, D. Sanders, R. Sankrit, G.Savini, J.-D. Smith, S. Stierwalt  
Submitted as an invited review article to Journal of Astronomical Telescopes, Instruments, and Systems (arXiv:1709.02389)
9. *VLA Observations of the HD 141569 Triple System*  
J. A. White, A. C. Boley, **M. A. MacGregor**, A. M. Hughes, D. J. Wilner  
Submitted to Monthly Notices of the Royal Astronomical Society
8. *ALMA 1.3 Millimeter Map of the HD 95086 System*  
K. Y. L. Su, **M. A. MacGregor**, M. Booth, D. J. Wilner, K. Flaherty, A. M. Hughes, N. M. Phillips, R. Malhotra, A. S. Hales, S. Morrison, S. Ertel, B. C.

Matthews, W. R. F. Dent, S. Casassus  
Submitted to Astronomical Journal

7. *Detection of exocometary CO within the 440 Myr-old Fomalhaut belt: a similar CO+CO<sub>2</sub> ice abundance in exocomets and Solar System comets*  
L. Matrà, **M. A. MacGregor**, P. Kalas, M. C. Wyatt, G. M. Kennedy, D. J. Wilner, G. Duchene, A. M. Hughes, M. Pan, A. Shannon, M. Clampin, M. P. Fitzgerald, J. R. Graham, W. S. Holland, O. Panić, K. Y. L. Su  
Astrophysical Journal, 842, 9, 2017 (arXiv:1705.05868)
  6. *A Multi-Ringed, Modestly-Inclined Protoplanetary Disk Around AA Tau*  
R. A. Loomis, K. I. Öberg, S. M. Andrews, **M. A. MacGregor**  
Astrophysical Journal, 840, 23, 2017 (arXiv:1704.02006)
  5. *An ATCA survey of debris disks at 7 millimeters*  
L. Ricci, S. T. Maddison, D. Wilner, **M. A. MacGregor**, C. Ubach, J. M. Carpenter, L. Testi  
Astrophysical Journal, 813, 138, 2015 (arXiv:1510.03513)
  4. *The AU Mic Debris Disk: Far-infrared and Submillimeter Resolved Imaging*  
B. C. Matthews, G. Kennedy, B. Subthorpe, W. Holland, M. Booth, P. Kalas, **M. A. MacGregor**, D. Wilner, B. Vandenbussche, G. Olofsson, J. Blommaert, A. Brandeker, W. R. F. Dent, B. L. de Vries, J. Di Francesco, M. Fridlund, J. R. Graham, J. Greaves, A. M. Heras, M. Hogerheijde, R. J. Ivison, E. Pantin, G. L. Pilbratt  
Astrophysical Journal, 811, 100, 2015 (arXiv:1509.06415)
  3. *Ammonia Thermometry of Star-Forming Galaxies*  
J. G. Mangum, J. Darling, C. Henkel, K. M. Menten, **M. A. MacGregor**, B. E. Svoboda, E. Schinnerer  
Astrophysical Journal, 779, 33, 2013 (arXiv:1310.6586)
  2. *Constraining a Model of Turbulent Coronal Heating for AU Microscopii with X-Ray, Radio, and Millimeter Observations*  
S. R. Cranmer, D. J. Wilner, **M. A. MacGregor**  
Astrophysical Journal, 772, 149, 2013 (arXiv:1306.4567)
  1. *A Resolved Millimeter Emission Belt in the AU Mic Debris Disk*  
D. J. Wilner, S. M. Andrews, **M. A. MacGregor**, A. M. Hughes  
Astrophysical Journal Letters, 749, L27, 2013 (arXiv:1203.1896)
- UNREFEREED  
PUBLICATIONS
3. *Enabling New ALMA Science with Improved Support for Time-Domain Observations*  
Corresponding author P. K. G. Williams  
Submitted to ALMA Science Advisory Council (arXiv:1703.04692)
  2. *A Resolved Millimeter Emission Belt in the AU Mic Debris Disk*  
**M. A. MacGregor**  
Exploring the Formation and Evolution of Planetary Systems, Proceedings of the International Astronomical Union, IAU Symposium, 2014, Vol. 299, pp. 313-317
  1. *Densitometry and Thermometry of Starburst Galaxies*  
J. G. Mangum, J. Darling, K. M. Menten, C. Henkel, **M. A. MacGregor**  
EAS Publication Series, 2011, Vol. 52, pp. 71-74