Matthew L. Lister

Office address:
Dept. of Physics and Astronomy
Purdue University
525 Northwestern Ave.
West Lafayette, IN 47907-2036

Phone: (765) 494-5171
Cell: (617) 775-1917
Email: mlister@purdue.edu

Citizenship: USA (naturalized), Canada (birth)
Languages: English (native), French (high proficiency)

Education

Ph.D., Astronomy, Boston University, Jan. 1999. Thesis title: *The Influence of Special Relativistic Effects on the Observed Properties of Active Galactic Nuclei*, Advisor: Prof. Alan Marscher

M.Sc., Physics and Astronomy, University of Victoria, Canada, June 1993. Thesis Title: *Second-Epoch, High-Resolution Observations of a Low-Redshift Radio Quasar Sample*, Advisor: Prof. Ann Gower

B.Sc., cum laude, Physics and Astronomy, University of Toronto, Canada, June 1991

Present Position

Professor of Physics and Astronomy, Purdue University, West Lafayette IN., 2013 – present
Visiting Research Scholar, Center for Astrophysics | Harvard & Smithsonian, 2021 - present

Previous Positions

Associate Professor of Physics, Purdue University, West Lafayette, IN, 2009 – 2013
Assistant Professor of Physics, Purdue University, West Lafayette, IN, 2003 – 2009
Karl Jansky Postdoctoral Fellow, National Radio Astronomy Observatory, Charlottesville, VA, 01/2001 – 08/2003
Faculty lecturer, Department of Astronomy, University of Virginia, Fall 2001, Fall 2002
Caltech Postdoctoral Fellow, NASA Jet Propulsion Laboratory, U.S. Space VLBI Project., 09/1998 – 12/2000
Graduate Teaching/Research Assistant, Department of Astronomy, Boston University, 09/1993 – 09/1998
Graduate Teaching/Research Assistant, Department of Physics and Astronomy. University of Victoria, Canada, 09/1991 – 07/1993

Awards and Honors

2017: University Faculty Scholar Award for Outstanding Research: Purdue University
2013: College of Science Award for Research Excellence, Purdue University
2000: Karl Jansky Fellowship, National Radio Astronomy Observatory

2000: National Science Foundation Postdoctoral Fellowship, JPL (declined)
1999*:* NASA Group Achievement Award for contributions to the U.S. Space VLBI Project.
1988: Faculty Scholar, University of Toronto
1987: 5T9 Entrance Scholarship, Trinity College, University of Toronto

Professional and Scholarly Associations

American Astronomical Society, American Physical Society, International Astronomical Union

Teaching Experience

Purdue University:

Professor – ASTR 264: "Descriptive Astronomy: Stars and Galaxies"	**Spring 2021,2022**
Professor – ASTR 563: "Astroparticle Physics", graduate course	**Spring 2020, 2019**
Professor – ASTR 561: "Galaxies and Large Scale Structure", graduate course	**Fall 2019, 2018, 2017**
Professor – ASTR 567: "Observational Techniques in Astronomy", developed new graduate course	**Fall 2016, 2015, 2014**
Professor – ASTR 560: "Stellar Evolution", graduate course	**Spring 2013, 2012, 2010, 2006, 2005, 2004**
Professor & Lab Coordinator: PHYS 340: "Modern Physics Laboratory", advanced undergraduate level lab.	**Fall 2013, 2012, 2011**
Professor – ASTR 562: "High Energy Astrophysics", graduate course.	**Spring 2009, 2008, 2007**
Professor – ASTR 363: "Intermediate Astronomy: The Solar System", advanced undergraduate course.	**Fall 2009, 2008**
Professor – ASTR 364: "Intermediate Astronomy: Stars and Galaxies", advanced undergraduate course.	**Spring 2018, 2017, 2016, 2015, 2014**
Professor & Lab Coordinator – ASTR 263: "Descriptive Astronomy: The Solar System", undergraduate course and laboratory.	**Fall 2007, 2006, 2005, 2004**

University of Virginia, Charlottesville, VA

Professor – ASTR 140: "Introduction to the Sky and Solar System", undergraduate course.	**Fall 2001, 2002**

Boston University, Boston, MA

Teaching Assistant: undergraduate astronomy laboratory	**1993-1998**

University of Victoria, Victoria, BC, Canada

1991-1993

Teaching Assistant: undergraduate astronomy laboratory

Mentoring Experience

Faculty:

1. Daniel Milisavljevic (Assistant Professor) 2019-
2. Dimitrios Giannios (Assistant & Associate Professor) 2013-
3. John Peterson (Associate Professor) 2018-
4. Rafael Lang (Assistant & Associate Professor) 2011-2017
5. Jay Rhee (Associate Research Professor), 2010-2011

Postdoctoral scholars:

6. Biny Sebastian (2020-2021)
7. Emilia Jarvela (visiting scholar Summer 2019)
8. Jennifer Richards (2011-2016)
9. Talvikki Hovatta (2009-2011)
10. Preeti Kharb (2007-2009)

M.Sc. and Ph.D. students:

11. Mihai Cara, Ph.D. date: August 2008
12. Sarma Kuchibhotla, Ph.D. date: Oct. 2010
13. Nathan Cooper, Ph.D. date: Dec. 2010
14. Brandon Hogan, Ph.D. date: April 2011
15. Ethan Stanley, Ph.D. Date: November 2017
16. Mary Ann Hodge, Ph.D., Date: Feb. 2019
17. John Hunter, Aug 2019-Aug 2020
18. Soham Mandal, Aug 2019-Dec 2020

Graduate Research Advisor:

19. Alison Parlee (Summer 2004)
20. Suzanne Nichols (Summer 2006)
21. Shigeharu Kihara (2005–2006)
22. Glynn Bricker (2004)
23. Jignesh Mehta (2010-2012)
24. Marco Berton (visiting graduate student from U. Padua, Italy, summer 2014)
25. Mar Roca (visiting graduate student from U. Granada, Spain, summer 2008)

Undergraduates:
28 students advised in research projects since 2002, including Purdue Physics Research Experiences for Undergraduates (REU) program, Purdue Summer Research Opportunities Program (SROP), Purdue Physics Ascarelli Fellowship program, and Purdue Engineering Summer Undergraduate Research Fellowship (SURF) program.

Ph.D. Advisory Committee Member:

Zach Davis, Juehang Qin,Yun Huang, Yongquan Xue, John Millis, Gabor Psotza, Dongwoo Khang, Chulhoon Chang, Joshua Konzer, Eric Brown, Daniel Gall, Eric Claussen-Brown, Shayne Reichard, David Silvers, James Tucci, Jordan Kendall, Li Yi, Adithan Kathirgamraju, Ian Christie, Yonggang Luo.

M.Sc. Advisory Committee Member:
Emily Mace, Daniel Gall, Sarma Kuchibhotla, Birgitte Brydsoe, Shigeharu Kihara

Graduate Student Advisor:
Peter Dudley, Angelo Varlotta, Shayne Reichard

Undergraduate Student Advisor:
Sara Cuevas, Isaiah Holt, Nick Mellott, Desiree Skaggs, Amy Lankey

Faculty mentor for Purdue HORIZONS student advising and retention program, 2004–2010, 2013-
Faculty mentor for Purdue BoilerMentor Program
Faculty mentor for Purdue Emerging Leaders Scholars Program for underrepresented students 2020-

Administrative Experience

Purdue Department of Physics and Astronomy

1. Astrophysics Faculty Search Committee, 2006, 2011, 2016 (chair), 2020
2. Raman Prize and Ramdas Award Committee, 2019-
3. Department Head Council member, 2015-
4. Diversity Committee, 2012-
5. Colloquium Committee, 2008- (chair 2016-2017)
6. Applied Physics Major Oversight Committee (chair 2006–)
7. Astronomy Minor Committee, 2004–
8. Space Allocation Committee (2009-2011)
9. Computer Committee, 2006–2013 (chair: 2009-2013)
10. Department Head Search Committee, 2011
11. Physics Advisory Committee, 2005–2006, 2011-2013 (chair 2012-2013)
12. Physics Qualifying Exam Committee, 2003–2006
13. Physics Promotions Sub-Committee, 2013-2015, 2018-2020
14. Services and Facilities Committee, co-chair: 2008

Purdue College of Science

15. Grievance Hearing Committee, School of Science, 2003–06, 2011-13
16. Area Promotions Committee 2013-2015, 2018 (alternate)
17. Faculty Council 2015- 2018 (secretary 2016-2017, Chair 2017-2018)

Purdue University

18. Campus sustainability committee 2015-2016

Astronomical Observing Experience

- Over 5000 hours as PI of numerous observing programs on the VLBA

- PI or Co-PI of numerous observing programs on Chandra, Hubble Space Telescope, VSOP space telescope, RadioAstron space telescope, WIYN, and VLA/EVLA telescopes.

Computational Experience

Linux, Python, Perl, MySQL, C, R, Fortran, Perl Data Language, Astronomical Image Processing System, CASA, DIFMAP, LaTex

Research Funding (Total awarded to date: $3.6M)

Agency	Title	Period	Award	Role
NSF	MOJAVE: Parsec-Scale Jet Acceleration and the Blazar-Neutrino Connection	2022-2025	$486,160 (pending)	Sole P.I.
NASA	Investigating Gamma-Ray Emission from Young Radio Galaxies	2023-2024	$80,000	Sole P.I.
NASA	Probing the X-Ray Properties of Radio Galaxy Jets in Their Restarting Phase	2023-2024	$50,000	Sole P.I.
NASA	MOJAVE: Probing Acceleration, Magnetic Field Evolution, and Gamma-ray Emission in AGN Jets	2020-2022	$300,000	Sole P.I.
NASA	The Nature of Jets in Hybrid MOJAVE Blazars	2020-2022	$100,000	Co-I.
NASA	Chandra Observations of the Young Gamma-Ray AGN TXS 0128+554	2019-2020	$55,000	P.I. (+1 unfunded Co-I.)
NASA	WIYN 3.5m Spectroscopy of Radio-Loud Fermi AGN	2019-2020	$55,000	Sole P.I.
NASA	TXS 0128+554: A Rare Young Gamma-Ray Loud AGN?	2018-2020	$55,000	Sole P.I.
NASA	The Parsec and Kiloparsec Jet Properties of MOJAVE AGN	2015-2020	$540,000	Sole P.I.
NASA	Radio and Optical Monitoring Of Radio-Loud Narrow-Line Seyfert 1 Galaxies	2012-2015	$200,000	One of 2 Co-Is
NASA	Probing the Causes of the High/Low Jet Power Dichotomy with Chandra and HST	2013-2014	$62,200	One of 3 Co-Is
NASA	The VLBA 2cm MOJAVE/Fermi Program	2012-2015	$390,000	Sole P.I.
NSF	Jet Physics of Supermassive Black Hole Accretion Systems	2008-2011	$324,376	Sole P.I.
NASA	The MOJAVE Program: Jet Kinematics of Gamma-Ray Blazars	2008-2012	$597,900	Sole P.I.
NASA	Probing X-ray Jet Emission Mechanisms in a Complete Blazar Sample	2008-2010	$70,000	One of 3 Co-Is

NASA	Shock Heating by Double-Lobed Radio Sources in Spiral Galaxies	2007-2009	$16,050	One of 4 Co-Is
NASA	Surveying X-ray Jets in Superluminal Blazars	2007-2009	$74,295	One of 2 Co-Is
NRAO	The VLBA 2cm MOJAVE/Fermi Program	2007-2008	$28,509	Sole P.I.
Purdue Research Foundation	Structure and Evolution of Relativistic Outflows...	2006-2007	$15,290	Sole P.I.
Purdue Research Foundation	Structure and Evolution of Relativistic Outflows...	2005-2006	$14,850	Sole P.I.
NSF	Structure and Evolution of Relativistic Outflows Associated with Supermassive Black Holes	2004–2008	$296,600	Sole P.I.

Publications

Summary from NASA-ADS as of May, 2022:

Publications in refereed journals: 147 (34 as first or sole author)
Citations: 9,802
Hirsch index: 54 (54 publications with > 54 citations)

Refereed publications since 2020:

1. *The Unanticipated Phenomenology of the Blazar PKS 2131-021: A Unique Supermassive lack Hole Binary Candidate,* O'Neill, S., et al., 2022, ApJ 926, 35
2. *New Tests of Milli-lensing in the Blazar PKS 1413 + 135 ,* Peirson, A. L., et al., 2022, ApJ, 927, 24
3. *A Decade of Joint MOJAVE-Fermi AGN monitoring: localization of the gamma-ray emission region,* Kramarenko, I.G., Pushkarev, A. B. , Kovalev, Y. Y, **Lister, M. L. ,** Hovatta, T. , Savolainen, T. , 2022, MNRAS, 510,469.
4. *Probing the Innermost Regions of AGN Jets and Their Magnetic Fields with RadioAstron. V. Space and Ground Millimeter-VLBI Imaging of OJ 287,* Gomez, J.-L., et al. 2022, ApJ, 924, 122.
5. *MOJAVE XIX: Brightness Temperatures and Intrinsic Properties of Blazar Jets,* D. C. Homan ,M. H. Cohen, T. Hovatta, K. I. Kellermann, Y. Y. Kovalev, **M. L. Lister,** A. V. Popkov, A. B. Pushkarev, E. Ros, T. Savolainen, 2021, ApJ, 923,67
6. *MOJAVE: XVIII. Kinematics and Inner Jet Evolution of Bright Radio-Loud Active Galaxies,* **Lister, M. L.,** Homan, D. C., Kellermann, K. I., Kovalev, Y. Y., Pushkarev, A. B., Ros, E., Savolainen, T. 2021, ApJ, 923,30
7. *What defines a compact symmetric object? A carefully vetted sample of compact symmetric objects*, Readhead, A.C.S. et al., 2021, AN, 342, 1185.
8. *A New Sample of Gamma-Ray Emitting Jetted Active Galactic Nuclei—Preliminary Results,* Foschini, L. et al., 2021, Universe, 7, 372.

9. *An Oversized Magnetic Sheath Wrapping around the Parsec-scale Jet in 3C 273,* Lisakov, M. M., Kravchenko, E. V., Pushkarev, A. B., Kovalev, Y. Y., Savolainen, T. K., **Lister, M. L,** 2021, ApJ, **910**, 35
10. *The Relativistic Jet Orientation and Host Galaxy of the Peculiar Blazar PKS 1413+135,* Readhead, A. C. S., et al., 2021, ApJ, **907**, 51
11. *A transition from parabolic to conical shape as a common effect in nearby AGN jets,* Y. Y. Kovalev, A. B. Pushkarev, E. E. Nokhrina, A. V. Plavin, V. S. Beskin, A. Chernoglazov, **M. L. Lister**, & T. Savolainen, 2020, MNRAS, **495**, 3576
12. *TXS 0128+554: A Young Gamma-Ray Emitting AGN With Episodic Jet Activity,* **M. L. Lister**, D. C. Homan, Y. Y. Kovalev, S. Mandal, A. B. Pushkarev, & A. Siemiginowska, 2020, Astrophysical Journal, **899**, 141
13. *Studies of stationary features in jets: BL Lacertae. I. Dynamics and brightness asymmetry on sub-parsec scales,*T. G. Arshakian, A. B. Pushkarev, **M. L. Lister,** & T. Savolainen, 2020, Astronomy & Astrophysics, **640**, A62
14. *A decade of multi-wavelength observations of the TeV blazar 1ES 1215+303: Extreme shift of the synchrotron peak frequency and long-term optical-gamma-ray flux increase,*J. Valverde et al., 2020, Astrophysical Journal, **891**, 170
15. *"VERITAS Discovery of VHE Emission from the Radio Galaxy 3C 264: A Multi-Wavelength Study",* Archer, A., et al., 2020, ApJ, **896,** 41
16. *"Compact Bright Radio-loud AGNs -- III.A Large VLBA Survey at 43 GHz",* An, T. et al., 2020, ApJS, **247**, 57

(Full publication list at https://www.physics.purdue.edu/~mlister/webpages/publications.html

Lectures and Presentations

1. Invited Talks at Scientific Meetings

1. "Parsec-scale Jet Kinematics", The Multimessenger Chakra of Blazar Jets, Kathmandu, Nepal, Dec. 2022
2. "Jet Launching Working Group: Scientific Goals", Assembling the ngEHT, Granada, Spain, June 2022
3. "Multi-frequency AGN Monitoring Programs and the ngEHT", NgEHT Science Meeting, Harvard (virtual), February 2021
4. TXS 0128+554: A Young Gamma-Ray-emitting Active Galactic Nucleus with Episodic Jet Activity", 237th AAS meeting (virtual), January 2021
5. "Parsec-Scale Studies of Blazar Jet Kinematics", invited review talk, Half a Century of Blazars and Beyond, Turin, Italy, June 2018
6. "Radio Properties of Narrow Line Seyfert I Galaxies", invited review talk, Revisiting NLSY1 Galaxies and their Place in the Universe, Padua, Italy, April 2018
7. "Polarization Evolution of Parsec-Scale Jets in Active Galactic Nuclei", invited review talk, 2018 USNC-URSI National Radio Science Meeting, Boulder, CO, January 2018
8. "Parsec-Scale Polarization Properties of AGN Jets", invited review talk, Blazars Through Sharp Multi-Wavelength Eyes, Malaga, Spain, May 2016
9. "Long Term Kinematic Behavior of Parsec Scale Blazar Jets", Invited review talk, Relativistic Jets: Creation, Dynamics, and Internal Physics, Krakow, Poland, April 2015
10. "Large AGN Surveys With VLBI", 3rd China/U.S. Workshop on Radio Astronomy Science and Technology: Emerging Opportunities, NRAO, Green Bank, WV, invited review talk, May 2014

11. “A Survey of Active Galactic Nuclei Jets with the RadioAstron Space Very Long Baseline Interferometry Mission”, invited talk, Union of Radio Scientists International meeting, Boulder, CO, Jan. 2014
12. “Polarization Properties of AGN Jets”, Invited review talk, The Innermost Regions of Jets, Granada, Spain, June 2013
13. “Blazars at High Resolution”, XXVIII International Astronomical Union Assembly, Invited review talk, Beijing, China, August 2012
14. “Ahead of the (Light) Curve: UMRAO and the 4th Dimension of Radio AGN Surveys”, University of Michigan Radio Observatory Symposium, Invited review talk, Ann Arbor, MI, April 2012
15. “Gamma-ray emission from Parsec-scale AGN Jets”, invited review talk, CTA Meeting, Toulouse, France, May 2011
16. “The MOJAVE AGN Program”, The Future of the VLBA Workshop, NRAO HQ, Charlottesville, VA, Jan. 2011
17. “Parsec-Scale Properties of Fermi-Detected AGN”, Fermi Meets Jansky AGN Meeting, MPIfR, Bonn, Germany, June 2010
18. “Jet Kinematics and Beaming in Radio-Selected Gamma-ray Blazars”, AAS special session, Washington D.C., Jan 2010
19. “The Pearson-Readhead Survey”, First VSOP-II Symposium, Tokyo, Japan, Dec. 2007
20. “Milliarcsecond Polarimetry of AGN Jets with MOJAVE”, URSI Meeting, Ottawa, Canada, July 2007
21. ”Parsec-scale Jet-environment Interactions in AGN”, Extragalactic Jets, Girdwood, Alaska, May 2007
22. ”The MOJAVE Project: Outline, Results, Plans” VLBA and Fermi workshop, GSFC, April 2007
23. “MOJAVE: Investigating Evolution in Blazar Jets”, VERITAS Project Workshop, Lafayette IN, Aug. 2006
24. “The MOJAVE Program”, Challenges of Relativistic Jets, Crakow, Poland, June 2006
25. “Parsec-scale Blazar Jets”, Astrophysical Jets Special Session, 206th AAS meeting, June 2005
26. “Recent Results from VLBI Blazar Surveys”, Blazar Variability Workshop II, Miami FL, April 2005
27. “Parsec-scale Blazar Jets”, Workshop on Relativistic Jet Physics, Granada, Spain, April 2005
28. “Gigahertz Peaked Spectrum Sources”, Radio Astronomy at the Fringe, Green Bank, WV, Oct. 2002
29. Jansky Symposium, NRAO Charlottesville, VA, Oct. 2001
30. “Radio Structure of High- and Low-Optically Polarized Blazars”, Theory and Observations of Relativistic Jets, Granada, Spain, May 1999

2. Invited Colloquia and Seminars

1. “Gargantua of the Cosmos: Jetted Outflows, Neutrino Emission, and Supermassive Black Holes”, invited colloquium, Boston University, April 2022
2. “Gargantua of the Cosmos: Jetted Outflows, Neutrino Emission, and Supermassive Black Holes”, invided colloquium, Brandeis University, March 2022
3. “ngEHT: Parsec-scale Jet Kinematics”, ngEHT Jet Launching/Accretion Working Group Meeting (virtual), September 2021
4. “Parsec-Scale Jetted Outflows Powered by Supermassive Black Holes”, Black Hole Institute invited colloquium, Harvard (virtual), February 2021
5. “MOJAVE Program Overview”, invited Harvard CfA seminar, December 2019

6. “The structure and evolution of relativistic gamma-ray loud AGN jets”, invited talk, Harvard CfA, Cambridge MA, March 2020 (cancelled 3 days prior due to pandemic)
7. “Beyond Interstellar: Extracting Science from Black Holes”, invited participant, Keck Institute Workshop, Pasadena, CA, Sept. 2019
8. “Jetted Outflows Powered by Supermassive Black Holes”, Invited colloquium, Dept. of Astronomy and Physics, St. Mary’s University, Halifax, NS, Sept. 2018
9. “Jet Evolution in Active Galactic Nuclei”, Invited colloquium, NRAO, Socorro, NM, March 2015
10. “Supermassive Black Holes, Jets, and the γ-Ray Sky”, College of Science Award Colloquium, Purdue University, April 2013
11. “Supermassive Black Holes, Jets, and the Gamma-Ray Sky”, Purdue Physics Department Colloquium, Sept. 2012.
12. “Very Long Baseline Interferometry”, NRAO Synthesis Imaging Summer School, Socorro, NM, June 2012
13. “Blazars and the Gamma-Ray Sky”, NRAO colloquium, Charlottesville VA, March 2012
14. “Jetted Outflows from Supermassive Black Holes”, University College Cork Physics Department Colloquium, Ireland, March 2011
15. “Kinematics of Jets in Active Galaxies”, Boston University Astronomy Dept. Colloquium, Nov 2010.
16. “MOJAVE: Studying Jets from Supermassive Black Holes”, 1st Indiana Astrophysics Meeting, Purdue University, Oct. 2010
17. “Jets from Supermassive Black Holes: Beacons in the Gamma-Ray Sky”, Ball State University, Sept. 2010
18. “Relativistic Beaming in Gamma-Ray Blazars”, Purdue High-Energy Physics Seminar, Feb. 2010
19. “Jets From Supermassive Black Holes: Beacons in the Gamma-Ray Sky”, U. Michigan Dearborn, Dec. 2009
20. “Relativistic Jets in Active Galactic Nuclei”, U.S. Naval Research Laboratory, Nov. 2008
21. “Relativistic Jet Phenomena In Active Galactic Nuclei”, Purdue University, Oct. 2008
22. “Astrophysical Jets: Entering a New Era”, University of Calgary, Canada, May 2008
23. “Astrophysical Jets: Entering a New Era”, Dominion Radio Astrophysical Observatory, Canada, April 2008
24. “Astrophysical Jets Associated With Supermassive Black Holes”, APS Year of Physics Speaker, DePauw University, Dec. 2005
25. “The MOJAVE Project”, Colloquium, NRAO Charlottesville, VA, Aug. 2005
26. “Parsec-scale Relativistic Jets in Active Galaxies”, University of Notre Dame Astronomy Dept., Nov. 2004
27. “Extragalactic Source Surveys for RadioAstron”, RadioAstron meeting, Moscow, Russia, Nov. 2003
28. “Relativistic Jets in Active Galactic Nuclei”, University of Michigan Astronomy Dept., Oct. 2003
29. “Relativistic Jets in Active Galactic Nuclei”, Indiana University Astronomy Dept., Oct. 2003
30. “Relativistic Jets in Active Galaxies”, Purdue University Physics Dept., Feb. 2003
31. “Relativistic Jets in Active Galaxies”, Hampden-Sydney College, VA, Jan. 2003
32. “Relativistic Jets in Active Galaxies”, Queens University, Canada, Jan. 2003
33. “Space VLBI Observations of the Radio Galaxy 2021+614”, seminar, NRAO Socorro, NM, June 2002

34. "Relativistic Jets and Supermassive Black Holes in Active Galaxies", McGill University, Canada, Feb. 2002
35. "Ultra-High Resolution Radio Imaging of Active Galactic Nuclei", U. British Columbia, Canada, Jan. 2002
36. "Ultra-High Resolution Radio Imaging of Active Galactic Nuclei", University of Victoria, Canada, Jan. 2002
37. "Ultra-High Resolution Radio Imaging of Active Galactic Nuclei", Dominion Astr. Observatory, Canada, Jan. 2002
38. "Ultra-High Resolution Radio Imaging of AGN Jets", NRAO Green Bank Observatory, WV, Oct. 2001
39. "Space VLBI Observations of the Pearson-Readhead AGN Survey", Seminar, NRAO Charlottesville, VA, March 2001

3. Other Presented Scientific Talks and Posters as 1st author:

1. "Multi-frequency VLBA Time-Lapse Imaging of AGN Jets", Assembling the ngEHT, Granada, Spain, June 2022
2. "TXS 0128+554: A Young Gamma-Ray Emitting AGN With Episodic Jet Activity", Jets2021, Heidelberg, Germany (virtual), June 2021
3. "TXS 0128+554: A Young Gamma-Ray Emitting AGN With Episodic Jet Activity", 6th GPS/CSS meeting, Torun, Poland (virtual), May 2021
4. "The Quarter Century 1.5 Jy MOJAVE sample", Space VLBI 2020, Charlottesville, VA, Jan. 2020.
5. "Parsec Scale Radio Core Polarization Properties of MOJAVE AGN Jets", Blazars at Highest Resolution Workshop, Bonn, Germany, Dec. 2017
6. "Parsec Scale Radio Core Polarization Properties of MOJAVE AGN Jets", When Brandeis Met Jansky: astrophysics and beyond. Brandeis University, Waltham, MA, July 2017
7. "Why Have Many of the Brightest Radio-loud Blazars Not Been Detected in Gamma-Rays by Fermi?", 6th Fermi Symposium, Washington, D.C., Nov. 2015
8. "Parsec-Scale Radio Jet Characteristics of MOJAVE Hard-Spectrum Gamma-Ray Blazars", 224th meeting of the American Astronomical Society, Boston MA, June 2014 (poster)
9. "MOJAVE: Parsec-Scale Kinematics Analysis of AGN Jets from 1994 to 2011", Indiana Astronomers Meeting, Valparaiso, IN, Nov. 2013 (poster)
10. "MOJAVE: Parsec-Scale Kinematics Analysis of AGN Jets from 1994 to 2011", 222nd meeting of the American Astronomical Society, Indianapolis, IN, June 2013 (poster)
11. "The Pearson-Readhead Survey from Space", RadioAstron Key science workshop, Bonn, Germany, Nov. 2012 (talk).
12. "State of MOJAVE Address", MOJAVE team meeting, Purdue, June 2012 (talk)
13. "γ-Ray Loudness and the Parsec-Scale Jet Properties of a Complete Sample of Blazars From the MOJAVE Program", Fermi-Jansky Meeting, St. Michaels, Maryland, Nov. 2011 (talk)
14. "State of MOJAVE Address", MOJAVE team meeting, Cork, Ireland, May 2011 (talk)
15. "VLBA Key Science and Large Projects", NRAO New Mexico Symposium, Socorro, NM Nov. 2010. (poster)
16. "Relativistic Beaming in Gamma-Ray Blazars", 11th AAS HEAD Meeting, Kona, HI, March 2010 (talk)
17. "State of MOJAVE Address", Joint MOJAVE-Fermi LAT team meeting, MPIfR, Bonn, Germany, June 2010 (talk)

18. “The MOJAVE Program: Investigating the Parsec-Scale Jet Properties of Gamma-Ray Blazars”, 2nd Fermi Symposium, Washington D.C., Nov 2009 (talk)
19. “State of MOJAVE Address”, Joint MOJAVE-Fermi LAT team meeting, Goddard Space Flight Center, Greenbelt MD, Jan. 2009 (talk)
20. “The Extreme Superluminal Speed of the Quasar PKS 0804-077', 213th AAS Meeting, Long Beach, CA, Jan. 2009 (talk)
21. “State of MOJAVE Address”, MOJAVE team meeting, NRAO Headquarters, Charlottesville, VA July 2008 (talk)
22. “Jet Kinematics of a Complete Blazar Sample”, 211th AAS Meeting, Austin TX, Jan. 2008 (poster)
23. “Blazar Demographics withMOJAVE and Fermi”, 1st Fermi Symposium, Stanford, CA, Feb. 2007 (poster)
24. “Ejection Direction Variations in MOJAVE AGN Jets”, 209thAAS Meeting, Seattle, WA, Jan. 2007 (poster)
25. “The MOJAVE Program”, NRAO Legacy Projects Workshop, Socorro, NM, May 2006 (talk & poster)
26. ”Recent Results from VLBI Blazar Surveys”, 205thAAS Meeting, San Diego, CA, Jan. 2005 (poster)
27. “Milliarcsecond-Scale Radio Polarimetry of Relativistic Jets in Active Galaxies”, Astronomical Polarimetry, Kona, HI, March 2004 (poster)
28. “The MOJAVE Program”, 203rd AAS Meeting, Atlanta, GA, Jan. 2004 (poster)
29. “The MOJAVE Program”, Future Directions in High Resolution Astronomy, Socorro, NM, June 2003 (talk)
30. “Relativistic Jet Kinematics of Active Galaxies with Peaked Radio Spectra”, 201st AAS Meeting, Seattle WA, Jan. 2003 (poster)
31. “Kinematics of Relativistic Jets in Active Galactic Nuclei: The 2 cm VLBA Survey”, Active Galactic Nuclei: from Central Engine to Host Galaxy, Paris, France, July 2002 (poster)
32. “Relativistic Jet Kinematics of the GPS Source PKS 1345+125”, 200th AAS Meeting, Albuquerque, NM, June 2002 (talk)
33. “Anomalously Bright Cores in Classical Double-Lobed Quasars”, Jansky Symposium, NRAO Charlottesville, VA, Oct. 2001 (talk)
34. “Parsec-scale Polarization Properties of a Complete Sample of Active Galactic Nuclei at 43 GHz”, 198th AAS Meeting, Pasadena, CA, June 2001 (poster)
35. “Intrinsic Differences in the Inner Jets of High- and Low-Optically Polarized Radio Quasars”, Blazar Demographics and Physics, Baltimore MD, July 2000 (talk)
36. “Scientific Results from the VSOP Space VLBI Mission”, 196th AAS Meeting, Rochester, NY, June 2000 (poster)
37. “43 GHz Polarization Imaging of Pearson-Readhead AGNs Observed by VSOP”, VSOP Symposium, Sagamihara, Japan, Jan. 2000 (talk)
38. “Space VLBI Observations of the Pearson-Readhead AGN Survey”, 195th AAS Meeting, Atlanta, GA, Jan. 2000 (talk)
39. “The Parsec-Scale Magnetic Field Properties of Low-Optical Polarization Blazars”, URSI 26th General Assembly, Toronto, Canada, Aug. 1999 (poster)
40. “The Parsec-Scale Magnetic Field Properties of Low-Optical Polarization Blazars”, 194th AAS Meeting, Chicago, IL, June 1999 (poster)
41. “Predictions of ECS and SSC Emission Models for Flux-Limited Samples of Gamma-Ray Blazars”, VERITAS Workshop, Cambridge, MA, Oct. 1998 (poster)

42. "Statistical Effects of Doppler Beaming and Malmquist Bias on Flux-Limited Samples of Compact Radio Sources", IAU Colloquium 164, Socorro, NM, April 1997 (poster)
43. "Statistical Effects of Doppler Beaming on Flux-Limited Samples of Compact Radio Sources", Sixth New England Regional Quasar/AGN Meeting, MIT, May 1996 (talk)

4. Educational Seminars

1. "Investigating Jetted Outflows from Supermassive Black Holes", Phys 217, Purdue, Sept 2018
2. "Optical Telescopes", Purdue Astronomy Club, March 2018
3. "Investigating Jetted Outflows from Supermassive Black Holes", Phys 217, Purdue, Sept 2017
4. "Investigating Supermassive Black Hole Outflows from Radio to Gamma-Rays", Purdue Astronomy Club, March 2017
5. "Investigating Supermassive Black Hole Outflows from Radio to Gamma-Rays", presentation to visiting HBC students, Purdue, March 2017
6. "Supermassive Black Holes", Phys 217, Purdue, Oct 2016
7. "Investigating Supermassive Black Hole Outflows from Radio to Gamma-Rays", Purdue Astronomy Club, Nov. 2015
8. "Cosmic Jets and Supermassive Black Holes", Phys 217, Purdue, Oct. 2015
9. "Cosmic Jets and Supermassive Black Holes", Purdue Astronomy Club, Nov. 2014
10. "Astrophysics at Purdue", presentation for Experience Purdue Day on campus for high ability high school students, July 2014
11. "Cosmic Jets and Supermassive Black Holes", Phys 217, Purdue, Oct. 2014
12. "Cosmic Jets and Supermassive Black Holes", Purdue Astronomy Club, Oct. 2013
13. "Cosmic Jets and Supermassive Black Holes", Purdue Pugwash Society, Sep. 2013
14. "Astrophysical Jets Associated with Supermassive Black Holes", Phys 217, Purdue, Sep. 2013
15. "Astrophysical Jets Associated with Supermassive Black Holes", Phys 217, Purdue, Nov. 2012
16. "Astrophysical Jets Associated with Supermassive Black Holes", Phys 217, Purdue, Nov. 2011
17. "Astrophysical Jets Associated with Supermassive Black Holes", Phys 217, Purdue, Oct. 2010
18. "Astrophysical Jets Associated with Supermassive Black Holes", Phys 217, Purdue, Oct. 2009
19. "Astrophysical Jets Associated with Supermassive Black Holes", Phys 217, Purdue, Nov. 2008
20. "Relativistic Jets Associated with Supermassive Black Holes", Phys 217, Purdue, Nov. 2006
21. "Astrophysical Jets Associated with Black Holes", seminar given at meeting of Indiana AAPT, Purdue, Apr. 2006
22. "Careers in Astrophysics: Studying Relativistic Jets", Purdue Phys 290A Seminar, April 2006
23. "Astrophysical Jets Associated with Supermassive Black Holes", Purdue Phys 696 Seminar, Jan. 2006
24. "Radio Astronomy, Jets, and Black Holes", seminar given to Quarknet teacher group, Purdue, June 2005

25. "Careers in Astrophysics: Studying Relativistic Jets", Purdue Phys 290A Seminar, April 2005
26. "Astrophysical Jets Associated with Supermassive Black Holes", Purdue Phys 696 Seminar, Mar. 2005
27. "Radio Astronomy", seminar given to REU students, Purdue Physics Dept., June 2004
28. "Studying Jets and Supermassive Black Holes with Radio Telescopes", Seminar to Indiana High School students, March 2004
29. "Relativistic Jets in Active Galaxies", Purdue Phys 696 Seminar, Mar. 2004
30. "Careers in Astrophysics: Studying Relativistic Jets", Purdue Phys 290A Seminar, Feb. 2004
31. "Practical VLBI Techniques", seminar given to REU students, NRAO Charlottesville, VA, June 2002
32. "Practical VLBI Techniques", seminar given to REU students, NRAO Charlottesville, VA, June 2001

Other Professional Activities

1. Journal Referee

Frequent manuscript peer-reviewer for the Astronomical Journal, Astrophysical Journal, Astrophysical Journal Letters, Astronomy & Astrophysics, Astrophysics and Space Science, Journal of Astronomy and Astrophysics, Journal of Geodesy, Science, Monthly Notices of the Royal Astronomical Society, Nature Astronomy, Publications of the Astronomical Society of Japan, Reports on Progress in Physics, Research in Astronomy and Astrophysics.

2. Reviewer

1. Invited *Physics Today* book reviewer for *An Introduction to Radio Astronomy, 4th Edition,* 2019.
2. Proposal panel reviewer for National Science Foundation: 2008, 2011, 2013, 2015, 2019, 2020, 2021.
3. NRAO scientific proposal review committee member: VLBA and VLA telescopes, Mar. 2005 – Nov. 2006, 2016-2017
4. Textbook proposal reviewer, CRC Press, 2017
5. Proposal reviewer for Global VLBI/EVN/GMVA, 2016-
6. Proposal reviewer for U.S. Civilian Research and Development Foundation, 2006, 2007
7. Proposal panel reviewer for NASA: 2008, 2009, 2013 (2x)
8. Proposal panel reviewer for Russian RadioAstron Space Telescope Mission, 2014- (Chair 2018)
9. Grant reviewer for National Science Center, Poland, 2014
10. Grant reviewer for Netherlands Organization for Scientific Research, 2014
11. Grant reviewer for Shota Rustaveli National Science Foundation, Republic of Georgia, 2013

3. Scientific Organizing and User Committees

1. Member, Scientific organization committee,,"Broadening Horizons: exploring multi-band capabilities for the ngEHT", Cambridge, MA, Aug 2022
2. Member, NASA Fermi Users Group, 2016-2020

3. Member, Scientific orgranization committee, “eXtreme19”, Padova, Italy, Jan 2019
4. Member, Scientific organization committee, “Blazars Through Sharp Multi-Wavelength Eyes” , Malaga, Spain, May 2016
5. Member, Scientific organizing committee, “The Innermost Regions of Jets and their Magnetic Fields”, Granada, Spain, June 2013
6. Member, Scientific organizing committee, 1st Indiana Astrophysics Meeting, Purdue, Oct. 2010
7. Member, Scientific organizing committee, RadioAstron Symposium, Moscow, Russia, Oct 2008
8. Member, Scientific organizing committee, NRAO Legacy Surveys, Socorro, NM, May 2006

4. Scientific Textbook Editor

1. *21st Century Astronomy 4th Edition*, by Hester et al., June 2012
2. *21st Century Astronomy*, by Hester et al., March 2008
3. *Modern Astrophysics, 2nd Edition* by Carroll & Ostlie, Oct. 2005
4. *Astronomy Today, 6th Edition* by Chaisson & McMillan, Nov. 2005
5. *Astronomy for Dummies, 2nd Edition* by Stephen Maran, Dec. 2004

5. Workshops and Other Activities

1. Co-science lead, Jet Launching Group, ngEHT Organization, June 2021-
2. Sabbatical leave, Center for Astrophysics | Harvard & Smithsonian, Fall 2020, Fall 2021
3. Member, EHT Multi-Wavelength Science Group, 2019-
4. Participant, Online Data Investigations for Your Classroom, 237th AAS meeting (virtual), Jan 2021
5. Sabbatical leave, Center for Astrophysics | Harvard Smithsonian, Fall 2020, Fall 2021
6. XSEDE Big Data Workshop participant, Purdue University, August 2019
7. Faculty representative, Purdue commencement ceremonies: 2019, 2013, 2004
8. Summer research advisor for Isiah Holt, Purdue SROP program for students from underrepresented social and economic backgrounds, 2018
9. Participated in HBC student visit to Phys. & Astr. Dept., March 2017
10. Participant, Purdue faculty hiring workshop, 2011, 2016
11. Participant, prospective graduate student open house, March 2016, 2017
12. Sigma Chi Graduate Student Science Fair Judge, Purdue, Feb. 2014
13. Initiated and led successful campaign to change Purdue physics department name to Department of Physics and Astronomy, 2014
14. External master’s thesis examiner for University College Cork, Ireland, Jan 2012
15. Sabbatical leave: Jan. – June 2011: University College Cork, Ireland, Department of Physics
16. Member, RadioAstron Science Program Working Group 2010-
17. Member, U.S. science proposal committee for VSOP-II program 2010
18. Purdue University Diversity Workshop participant, Oct. 2008
19. Staffed physics booth at Purdue Graduate School Fair, Sept. 2008
20. Associate Member, VERITAS Telescope Array Collaboration, 2011-
21. External doctoral thesis examiner for University of Turku, Finland, Nov. 2006
22. Attendee, *Cosmos in the Classroom Teaching Workshop*, Medford. MA, Aug. 2004
23. Sigma Chi Graduate Student Science Fair Judge, Purdue, Feb. 2004
24. NAIC/NRAO Single Dish Summer School participant, June 2001

Public Outreach Activities

1. TV interview with Star City News discussing new image of our Milky Way's central black hole. (May 2022)
2. Radio (WBAA) interview discussing new image of our Milky Way's central black hole. (May 2022)
3. Radio (WBAA) interview discussing discovery of new binary supermassive black hole system. (March 2022)
4. Press release: https://www.caltech.edu/about/news/colossal-black-holes-locked-in-dance-at-heart-of-galaxy (Feb. 2022)
5. Press release: https://www.nasa.gov/feature/goddard/2020/nasa-missions-explore-a-tie-fighter-active-galaxy (Aug 2020)
6. Purdue SMAP program activity leader for high school and middle school students, March 2020
7. Purdue Science on Tap guest speaker, public presentation on black hole imaging, April 2019
8. TV interview for WLFI discussing first ever image of a black hole, April 2019
9. Purdue Saturday Morning Astrophysics Program (SMAP): Developed and presented with David Sedelberg an interactive activity on radio astronomy and astronomical polarization for schoolchildren. Feb 2019
10. Press release: "Distant Black Hole Wave Twists Like Giant Whip", Caltech/JPL, Aug 2015
11. Live TV interview on Fox News Channel with Megyn Kelly re. Russian meteor event, Feb. 2013
12. Interview on WBAA radio re. MOJAVE press release on multiple quasar imaging event, 09/2013.
13. Press release: "Milky Way Gas Cloud Causes Multiple Images of Distant Quasar", joint release NRAO and Purdue, Aug 2013
14. Interviewed by Dr. John Millis on radio astronomy and MOJAVE program for RedOrbit podcast program., Feb. 2013
15. Guest speaker, Indiana Star Party, July 2012
16. Interviewed by Purdue NPR radio regarding solar flare event (Feb. 2012)
17. Gave astronomy presentation to first through 4th grade classes at Rockboro School, Cork, Ireland, Mar. 2011
18. Assisted in development of NRAO bookmark featuring MOJAVE program astronomical images distributed at AAS meeting, Seattle, January 2011 and NRAO-VLBA meeting, January 2011
19. Developed MOJAVE movie presentation with D. Homan for display at NRAO booth at AAS meeting, Seattle, January 2011
20. MOJAVE-Fermi montage used in Max Planck Institute for Radioastronomy 2010 wall calendar
21. MOJAVE-Fermi montage used in NRAO 2010 wall calendar
22. Gave astronomy presentation to 4th grade class at Happy Hollow School, October 2010
23. Guest speaker, meeting of Indiana Astronomical Society, Butler University, April 2010
24. Gave astronomy presentation to 3rd grade class at Cumberland School, W. Lafayette, Feb. 2010
25. Wrote article for Astronomical Society of the Pacific Magazine feature 'Astronomy Beat' entitled "The MOJAVE Program: Exploring Powerful Jets from Supermassive Black Holes", Feb 2010
26. Guest speaker, Indiana Star Party, July 2009
27. Gave astronomy presentation at neighborhood gathering, W. Lafayette, Sept. 2008
28. Astronomy presentation to 1st grade class at Cumberland School, W. Lafayette, March 2008
29. Press release on MOJAVE program: www.nrao.edu/pr/2008/mojave/ , Jan 2008
30. Interviewed by Michael Snyder of Midwest Business Journal for article on solar flares, June 2007
31. Interviewed by Chris Mader of Purdue Exponent for article on asteroid impacts, Feb. 2007
32. Produced MOJAVE project poster featured in 2006 Purdue College of Science Calendar

33. Interviewed by Wayne Pratt of Purdue NPR radio re. Pluto planet debate, Aug. 2006
34. Interviewed by Joey Marburger of Purdue exponent re. Pluto planet debate, Aug. 2006
35. Presentation on astronomy to 4-6 yr olds at Montessori Solar System Day Camp., July 2006
36. Interviewed for TV show *Chromospheres* at Jefferson High School Planetarium, March 2006
37. Interviewed for Purdue Exponent story on summer solstice, June 2005
38. Interviewed on local cable TV show *Chromospheres*, Feb. 2005

Other Interests

Playing piano, volleyball, genealogy, marathon running (PR 3h15m).