Jeremiah K. Darling

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EDUCATION

Cornell University. Ithaca NY, Department of Astronomy and Space Sciences
Ph.D. in Astrophysics 2/02; M.S. in Astrophysics 2/00, GPA 3.9
Dissertation: *"The Arecibo OH Megamaser Survey"*
Committee: R. Giovanelli (Major Advisor, Astrophysics), S. Teukolsky (Minor Advisor, Physics), M. Haynes, J. Cordes, D. Chernoff

California Institute of Technology. Pasadena, CA.
B.S. with Honors in Physics 6/96, GPA 3.9
Major Advisor: J. Pine (Physics); Research Advisors: S. G. Djorgovski & J. Cohen (Astronomy)

RESEARCH

Assistant Professor (8/06–present) University of Colorado. Applications of extragalactic formaldehyde to star formation, galaxy evolution, and cosmology. Mid-IR spectroscopy of OH megamaser and AGN host galaxies. Search for maser emission from "Hot Jupiters." Observation of an occultation of a radio lobe by Enceladus and Saturn's E-ring. Constraints on the evolution of fundamental constants. The coevolution of galaxies and massive black holes. Masers, molecules, and magnetic fields in galaxies. The proper motion of M31. Searches for HI 21 cm and molecular absorption at high and low redshift.

Hubble Fellow (8/05–8/06) University of Colorado. Search for radio-loud probes of the epoch of reionization. H I 21 cm surveys for damped Lyα systems. Surveys for high redshift molecular absorption. Extragalactic formaldehyde as a tracer of cold dense molecular gas. Constraints on the evolution of physical constants. H I rotation widths of AGN host galaxies.

Barbara McClintock Fellow (7/04–8/05), **Carnegie Fellow** (7/02–7/04). Carnegie Observatories. Synthesis imaging, photometric, long-slit, and integrated field studies of OH megamasers and merging galaxies. OH megamaser variability studies. Surveys for high redshift OH megamasers. Maser searches toward super star clusters and extrasolar planets. The radio X-ray connection in galaxy groups. Constraints on the evolution of physical constants. Search for radio-loud probes of the epoch of reionization. H I 21 cm surveys for damped Lyα systems. Extragalactic surveys for molecular transitions.

Research Associate. (10/01–6/02) Cornell University. Monitoring campaign to characterize the variability, size scales, and mechanisms of OH megamasers. VLBA spectral line observations of OH megamasers at $z \simeq 0.2$ to characterize maser size, distribution, and mechanism (with A. Peck & K. Menten). Optical spectral classification of OH megamaser galaxies. Survey for methanol megamasers (with P. Goldsmith, D. Li, & R. Giovanelli).

Thesis Research. (3/99–10/01) Cornell. The Arecibo OH megamaser survey. Results applied to merger rate of galaxies and a detailed study of the OH megamaser phenomenon. Discovered 50 OH megamasers.

Graduate Research. (3/00–6/01) Cornell. Study of environments of damped Lyα systems, bias, and evolution of "typical" galaxies (with A. Wolfe, E. Gawiser, J. Cooke, & J. Prochaska).

Graduate Research. (5/98–5/01) Cornell. R. Giovanelli. Astronomical site survey above 17,000 feet in northern Chile to characterize the seeing and water vapor profile throughout the seasonal cycle.

Undergraduate Research Assistant. (8/95–7/96) California Institute of Technology (Caltech). S. G.

Djorgovski. Continued the high-redshift quasar search; discovered four quasars with $z > 4$.

NASA Summer Undergraduate Research Fellow. (SURF; 6/95–8/95) Caltech. S. G. Djorgovski. Search for high redshift quasars using the Second Digitized Palomar Sky Survey and the Palomar 5m telescope. Discovered six quasars with $z > 4$.

Undergraduate Research Assistant. (8/94–6/95) Caltech. J. Cohen. Observed and constructed detailed, low noise light curves for 60 RR Lyrae variable stars in the globular cluster M15.

NASA SURF. (6/94–8/94) Caltech. J. Cohen. Light curve of the supernova 1993J progenitor in M81.

GRANTS, FELLOWSHIPS, & AWARDS

Provost's Faculty Achievement Award. (10/11) For the paper "Water Masers in the Andromeda Galaxy: The First Step Toward Proper Motion" (*J. Darling*, 2011, ApJ, 732, L2)

National Science Foundation (NSF) Grant. (08/11) "Proper Motion of the Andromeda Galaxy: The Key to Local Group Masses and Dynamics" (PI; AST 11-09078)

National Radio Astronomy Observatory (NRAO) Student Observing Support Grant. (05/10) "A Targeted Search for OH Megamasers in the COSMOS Field" (PI; support for K. Willett, GBT10B-026)

NRAO Student Observing Support Grant. (05/10) "Densitometry of Young Star-Forming Complexes Throughout the Galaxy" (Co-I; J. Bally PI, support for A. Ginsburg, GBT10B-019)

NRAO Student Observing Support Grant. (10/09) "Searching for Molecular Oxygen, the Hidden Key to Oxygen Chemistry in the ISM" (PI; support for B. Zeiger, GBT09C-046)

NRAO Student Observing Support Grant. (10/09) "Mapping Compact Radio Sources in Non-Elliptical Host Galaxies" (Co-I; J. Stocke PI, support for T. Yan, VLBA09C-130)

NSF Grant. (8/09) "Extragalactic OH Maser Astrophysics: From Andromeda to the Peak of Cosmic Star Formation" (PI; AST 09-08621)

NRAO Student Observing Support Grant. (01/09) "A Spectral Survey of an Opaque Atmospheric Window" (PI; support for B. Zeiger, GBT09A-064)

NASA Lunar Science Institute Grant. (12/08) "Lunar University Node for Astrophysics Research (LUNAR): Exploring the Cosmos from the Moon" (Co-I; J. Burns PI)

Chandra/Hubble Space Telescope Grant. (8/08) "The Structure and Physics of the Youngest Radio Galaxies" (Co-I; E. Perlman PI)

NRAO Student Observing Support Grant. (5/08) "A High Redshift OH Megamaser Survey" (PI; support for K. Willett, GBT08B-035)

Spitzer Space Telescope Grant. (2/08) "Witnessing the Birth of Radio Galaxies: Spitzer Spectroscopy of Nearby Compact Symmetric Objects" (Co-I; J. Stocke PI)

NRAO Student Observing Support Grant. (10/07) "Formaldehyde in the Gravitational Lens PKS 1830-211" (PI; support for B. Zeiger, GBT07C-056)

NSF Grant. (8/07) "Cosmological Changes in Fundamental Constants of Nature" (Co-I; J. Stocke PI; AST 07-07480)

NSF Grant. (7/07) "Formaldehyde: A Unique Probe of Galaxy Evolution and Cosmology" (PI; AST 07-07713)

Chandra Grant. (8/06) "Resolving the Nature of PKS 1413+135 and its Absorber" (Co-I; E. Perlman PI)

Spitzer Space Telescope Grant. (5/06) "The Astrophysics of OH Megamasers in Merging Galaxies: the Role of Star Formation, Dust, Molecules, and AGN" (PI)

Spitzer Space Telescope Grant. (5/06) "Compact Symmetric Objects: A New Class of 'Buried' AGN?"

(Co-I; J. Stocke PI)

Hubble Fellowship. (8/05–8/06)

Barbara McClintock Fellowship. (7/04–8/05)

Carnegie Fellowship. (7/02–7/04)

NSF Grant. (4/01) "OH Megamasers and Galaxy Evolution" (R. Giovanelli PI; AST 00-98526)

Cranson W. and Edna B. Shelly Award for Graduate Research in Astronomy. (5/00) Awarded by Cornell Astronomy Department for "outstanding graduate student research achievements in astronomy."

Elanor York Prize. (5/99) Awarded by Cornell Astronomy Department to the "most outstanding graduate student."

NASA Space Grant Fellowship. (8/96–12/96) Awarded by Cornell Astronomy Department.

Caltech Merit Scholarship. (9/95–6/96) Awarded by Caltech.

Doris S. Perpall SURF Speaking Award (First Place). (1/96) Awarded by Caltech/NASA JPL for summer research presentation competition.

Doris S. Perpall SURF Speaking Award (Semi-Finalist). (10/94) Awarded by Caltech/NASA JPL.

Millikan Book Scholarship. (9/92–6/94) Awarded by Caltech Admissions Office.

National Merit Scholarship. (9/92–6/93)

REFEREED PUBLICATIONS

The ALFALFA HI Absorption Pilot Survey: A Wide-Area Blind Damped Lyman Alpha System Survey of the Local Universe. *J. Darling*, E. P. Macdonald, M. P. Haynes, R. Giovanelli. 2011, ApJ, 742, 60 (7pp)

Galactic H_2CO Densitometry I: Pilot Survey of Ultracompact HII Regions and Methodology. A. Ginsburg, *J. Darling*, C. Battersby, B. Zeiger, & J. Bally. 2011, ApJ, 736, 149 (24pp)

Water Masers in the Andromeda Galaxy: The First Step Toward Proper Motion. *J. Darling.* 2011, ApJ, 732, L2 (6pp)

Mid-Infrared Properties of OH Megamaser Host Galaxies: I. Spitzer IRS Low- and High-Resolution Spectroscopy. K. Willett, *J. Darling*, L. Armus, H. Spoon, & V. Charmandaris. 2011, ApJS, 193, 18 (23pp)

Mid-Infrared Properties of OH Megamaser Host Galaxies: II. Analysis and Modeling of the Maser Environment. K. Willett, *J. Darling*,H. Spoon, V. Charmandaris, & L. Armus, 2011, ApJ, 730, 56 (14pp)

Water Masers Associated with Star Formation in the Antennae Galaxies. C. Brogan, K. Johnson, & *J. Darling.* 2010, ApJ, 716, L51–L56

Spitzer Mid-IR Spectroscopy of Compact Symmetric Objects: What Powers Radio-Loud Active Galactic Nuclei? K. W. Willett, J. T. Stocke, *J. Darling*, & E. S. Perlman. 2010, ApJ, 713, 1393–1412

Formaldehyde Anti-Inversion at z = 0.68 in the Gravitational Lens B0218+357. B. Zeiger & *J. Darling.* 2010, ApJ, 709, 386–395

New Searches for HI 21 cm in Damped Lyman α Absorption Systems. S. J. Curan, P. Tzanavaris, *J. Darling*, M. T. Whiting, J. K. Webb, C. Bignell, R. Athreya, & M. T. Murphy. 2010, MNRAS, 402, 35–45

Science with ASKAP, The Australian Square-Kilometre-Array Pathfinder. S. Johnston, R. Taylor, M. Bailes, N. Bartel, C. Baugh, M. Bietenholz, C. Blake, R. Braun, J. Brown, S. Chatterjee, *J. Darling*, (+39 coauthors). 2008, Experimental Astronomy, 22, 151–273

Ubiquitous Water Masers in Nearby Star-Forming Galaxies. *J. Darling*, C. Brogan, & K. Johnson. 2008, ApJ, 685, L39–L42

Properties of Active Galaxies Deduced from HI Observations. L. C. Ho, *J. Darling*, & J. E. Greene. 2008, ApJ, 681, 128–140

A New HI Survey of Active Galaxies. L. C. Ho, *J. Darling*, & J. E. Greene. 2008, ApJS, 177, 103–130

Formaldehyde Densitometry of Starburst Galaxies. J. G. Mangum, *J. Darling*, K. M. Menten, & C. Henkel. 2008, ApJ, 673, 832–846

Science with the Australian Square Kilometre Array Pathfinder. S. Johnston, M. Bailes, N. Bartel, C. Baugh, M. Bietenholz, C. Blake, R. Braun, J. Brown, S. Chatterjee, *J. Darling*, (+40 coauthors). 2007, PASA, 24, 174–188

HI and OH Absorption in the Lensing Galaxy of MG J0414+0534. S. J. Curran, *J. Darling*, A. D. Bolatto, M. T. Whiting, C. Bignell, & J. K. Webb. 2007, MNRAS, 382, L11–L15

A Dense Gas Trigger for OH Megamasers. *J. Darling.* 2007, ApJ, 669, L9–L12

Optical Spectral Classification of Major Mergers: OH Megamaser Hosts Versus Non-Masing (Ultra)Luminous Infrared Galaxies. *J. Darling* & R. Giovanelli. 2006, AJ, 132, 2596–2617

The Arecibo Legacy Fast ALFA Survey. I. Science Goals, Survey Design, and Strategy. R. Giovanelli, et al. 2005, AJ, 130, 2598–2612

On the X-Ray Properties of OH Megamaser Sources: Chandra Snapshot Observations. C. Vignali, W. N. Brandt, A. Comastri, & *J. Darling.* 2005, MNRAS, 364, 99–106

High Resolution Imaging of the OH Megamaser Emission in IRAS 12032+1707 and IRAS 14070+0525. Y. M. Pihlström, W. A. Baan, *J. Darling*, & H.-R. Klöckner. 2005, ApJ, 618, 705–711

Detection of 21 cm HI Absorption at z = 0.78 in a Survey of Radio Continuum Sources. *J. Darling*, R. Giovanelli, M. P. Haynes, A. D. Bolatto, & G. C. Bower. 2004, ApJ, 613, L101–L104

A Laboratory for Constraining Cosmic Evolution of the Fine Structure Constant: Conjugate 18 cm OH Lines Toward PKS 1413+135 at z = 0.2467. *J. Darling.* 2004, ApJ, 612, 58–63

Methods for Constraining Fine Structure Constant Evolution with OH Microwave Transitions. *J. Darling.* 2003, Phys. Rev. Lett., 91, 011301

Peculiar Broad Absorption Line Quasars Found in The Digitized Palomar Observatory Sky Survey. R. J. Brunner, P. B. Hall, S. G. Djorgovski, R. R. Gal, A. A. Mahabal, P. A. A. Lopes, R. R. De Carvalho, S. C. Odewahn, S. Castro, D. Thompson, F. Chaffee, *J. Darling*, & V. Desai. 2003, AJ, 126, 53–62

A Search for 6.7 GHz Methanol Masers in OH Megamaser Galaxies at 0.11<z<0.27. *J. Darling*, P. Goldsmith, D. Li, & R. Giovanelli. 2003, AJ, 125, 1177–1181

The OH Megamaser Luminosity Function. *J. Darling* & R. Giovanelli. 2002, ApJ, 572, 810–822

The Discovery of Time Variability in OH Megamasers. *J. Darling* & R. Giovanelli. 2002, ApJ, 569, L87–L90

A Search for OH Megamasers at $z > 0.1$. III. The Complete Survey. *J. Darling* & R. Giovanelli. 2002, AJ, 124, 100–126

A Search for OH Megamasers at $z > 0.1$. II. Further Results. *J. Darling* & R. Giovanelli. 2001, AJ, 121, 1278–1293

A Search for OH Megamasers at $z > 0.1$. I. Preliminary Results. *J. Darling* & R. Giovanelli. 2000, AJ, 119, 3003–3014

The Optical/Infrared Astronomical Quality of High Atacama Sites. I. Optical Seeing R. Giovanelli, *J. Darling*, M. Sarazin, J. Yu, P. Harvey, C. Henderson, W. Hoffman, L. Keller, D. Barry, J. Cordes, S. Eikenberry, G. Gull, J. Harrington, J. D. Smith, G. Stacey, & M. Swain. 2001, PASP, 113,

789–802

The Optical/Infrared Astronomical Quality of High Atacama Sites. II. Infrared Characteristics R. Giovanelli, *J. Darling*, C. Henderson, W. Hoffman, D. Barry, J. Cordes, S. Eikenberry, G. Gull, L. Keller, J. D. Smith, & G. Stacey. 2001, PASP, 113, 803–813

The Nonvariability of the Progenitor of Supernova 1993J in M81. J. G. Cohen, *J. Darling*, & A. Porter. 1995, AJ, 110, 308–311

SUBMITTED AND PENDING REFEREED PUBLICATIONS

Formaldehyde Silhouettes Against the Cosmic Microwave Background: A Mass-Limited, Distance-Independent, Extinction-Free Tracer of Star Formation Across the Epoch of Galaxy Evolution. *J. Darling* & B. Zeiger. 2012, ApJ, submitted (5pp)

A Search for Intrinsic HI 21 cm and OH 18 cm Absorption Toward Compact Radio Sources. *J. Darling*, K. Grasha, A. Bolatto, A. Leroy, & J. Stocke. 2012, ApJ, to be submitted early 2012 (24pp)

CONFERENCE PROCEEDINGS, BOOK CHAPTERS, & WHITE PAPERS

VLBA Observations of a Complete Sample of 2MASS Galaxies. J. Condon, *J. Darling*, Y. Y. Kovalev, & L. Petrov. 2011, 11th Asian-Pacific Regional IAU Meeting, NARIT Conference Series, arXiv:1110.6252 (2pp)

Densitometry and Thermometry of Starburst Galaxies. J. G. Mangum, *J. Darling*, K. M. Menten, C. Henkel, & M. MacGregor. 2011, 5th Zermatt ISM Symposium, EDP Sciences, 52, 71–74

How Do Galaxies Accrete Gas and Form Stars? M. E. Putman et al. (46 authors). 2009, Astronomy and Astrophysics Decadal Survey white paper.

A Radio Sky Surveys Pro ject with the Allen Telescope Array G. Bower et al. (52 authors). 2009, Astronomy and Astrophysics Decadal Survey white paper.

Masers in Starburst Galaxies *J. Darling*. 2007, Proc. IAU Symp. 242, Astrophysical Masers and Their Environments, eds. J. M. Chapman & W. A. Baan, 242, 417–426

Formaldehyde: A High Redshift Tracer of Pre-Starburst Gas? *J. Darling*. 2006, ASP Conf. Ser., From Z-Machines to ALMA: (Sub)millimeter Spectroscopy of Galaxies, eds. A. J. Baker, J. Glenn, A. I. Harris, J. G. Mangum, & M. S. Yun., 375, 208–214

Searching for High-Redshift Centimeter-Wave Continuum, Line, and Maser Emission Using the Square Kilometer Array. A. W. Blain, C. Carilli, & *J. Darling*. 2004, Science with the Square Kilometer Array, eds. C. Carilli & S. Rawlings, New Astronomy Reviews, 48, 1247–1257

Measuring Changes in the Fundamental Constants with Redshifted Radio Absorption Lines. S. J. Curran, N. Kanekar, & *J. Darling*. 2004, Science with the Square Kilometer Array, eds. C. Carilli & S. Rawlings, New Astronomy Reviews, 48, 1095–1105

OH Megamasers: Discoveries, Insights, and Future Directions. *J. Darling*. 2005, ASP Conf. Ser., Future Directions in High Resolution Astronomy: The 10th Anniversary of the VLBA, ed. J. D. Romney & M. J. Reid, 340, 216–223

The Arecibo OH Megamaser Survey and the Galaxy Merger Rate. *J. Darling*, and R. Giovanelli. 2000, ASP Conf. Ser., Gas and Galaxy Evolution, ed. J. Hibbard, M. Rupen, & J. van Gorkom, 240, 200–201

A Search for OH Megamasers at $z > 0.1$: Preliminary Results. *J. Darling*, and R. Giovanelli. 2001, ASP Conf. Ser., Science with the Atacama Large Millimeter Array, ed. A. Wootten, 235, 309–312

Luminosity Function of $z > 4$ Quasars from the Second Palomar Sky Survey. J. D. Kennefick, *J. Darling*, S. G. Djorgovski, & R. R. de Carvalho. 1997, Young Galaxies and QSO Absorption-Line Systems, ASP Conference Series, Vol. 114, ed. Sueli M. Viegas, Ruth Gruenwald, & Reinaldo R. de Carvalho, 95–98

ABSTRACTS

Galaxy Motions with Radio Astrometry. A. Brunthaler, M. Reid, K. Menten, G. Bower, *J. Darling*, H. Falcke, M. Garrett, C. Henkel, A. Loeb, L. Loinard, T. Oosterloo, E. Roediger, L. Sjouwerman, A. Tarchi, & J. van Gorkom. 2011, "Building on New Worlds, New Horizons: New Science from Sub-millimeter to Meter Wavelengths" meeting, Santa Fe, NM

A Search for Intrinsic HI 21-cm Absorption Toward Compact Radio Sources. K. Grasha & *J. Darling.* 2011, AAS Meeting 217, #345.02

The Formaldehyde Deep Field: A Mass-Limited, Distance-Independent, Extinction-Free Census of Cosmic Star Formation. *J. Darling* & B. Zeiger. 2011, AAS Meeting 217, #335.10

Formaldehyde Densitometry of Dust Clumps: The Shapes and Densities of Massive Star Forming Regions. A. Ginsburg, C. Battersby, *J. Darling*, & J. Bally. 2011, AAS Meeting 217, #258.03

Physical Molecular Probes of Star-Forming Galaxies. *J. Darling.* 2010, 'Stormy Cosmos: The Evolving ISM from Spitzer to Herschel and Beyond" meeting, Pasadena, CA

Frustrated by RFI: Present-Day Molecular Astrophysics at High Redshift. K. Willett & *J. Darling.* 2010, "Robotic Science From the Moon" meeting, Boulder, CO

The Search for Intrinsic and Intervening HI Absorption at High Redshift Toward Compact Radio Sources. K. Grasha & *J. Darling.* 2010, "Robotic Science From the Moon" meeting, Boulder, CO

The ALFALFA HI Absorption Survey. E. Macdonald, *J. Darling*, & the ALFALFA Team. 2010, Royal Astronomical Society National Astronomy Meeting, Glasgow, UK

Detection of Three Redshifted HI Absorption Systems. T. Yan, J. Stocke, & *J. Darling.* 2010, AAS Meeting 215, #460.07

Formaldehyde Absorption of the Cosmic Microwave Background: A Distance-Independent Tracer of Dense Molecular Gas. B. Zeiger & *J. Darling.* 2010, AAS Meeting 215, #415.04

Galactic Analog Water Masers in the Antennae Galaxies. C. Brogan, K. Johnson, & *J. Darling.* 2010, AAS Meeting 215, #320.04

Mid-Infrared Spectroscopy of Compact Symmetric Objects. K. Willett, J. Stocke, E. Perlman, & *J. Darling.* 2009, "Reionization to Exoplanets: Spitzer's Growing Legacy," Pasadena, CA

Formaldehyde Densitometry of Starburst Galaxies. J. G. Mangum, *J. Darling*, B. R. Zeiger, K. M. Menten, & C. Henkel. 2009, IRAM 30m 30th Anniversary Meeting

The ALFALFA HI Absorption Pilot Project. E. Macdonald, *J. Darling*, & the ALFALFA Team. 2009, AAS Meeting 213, #482.09

The Discovery of Water Masers in Nearby Star-Forming Galaxies. *J. Darling*, C. Brogan, & K. Johnson. 2009, AAS Meeting 213, #445.01

Observing High Redshift Starbursts With Formaldehyde. B. Zeiger & *J. Darling.* 2008, "The EVLA Vision: Galaxies Through Cosmic Time" NRAO, Socorro, NM

Mid-Infrared Spectroscopy of OH Megamasers. K. Willett, *J. Darling*, L. Armus, V. Charmandaris, H. Spoon, & Y. Pihlström. 2007, AAS Meeting 211, #141.05

A Dense Gas Trigger for OH Megamasers. *J. Darling.* 2007, AAS Meeting 211, #141.04

Formaldehyde Absorption Toward the Gravitational Lens B0218+357 at z=0.68. *J. Darling* & T. Wiklind. 2005, AAS Meeting 207, #203.01

Molecular Tori in AGN: A Search Using Excited States of OH. C. M. V. Impellizzeri, A. L. Roy, C. Henkel, *J. Darling*, & J. A. Braatz. 2005, Astron. Nachr., 326, 544

The Broad OH Megamaser Lines in Ultra Luminous Infrared Galaxies. Y. M. Pihlström, J. E.

Conway, & *J. Darling.* 2004, AAS Meeting 205, #26.09

OH Maser Disks and Outflows in ULIRGs: VLBA Observations of two IRAS Galaxies. Y. M. Pihlström, W. A. Baan, *J. Darling*, & H.-R. Klöckner. 2003, AAS Meeting 203, #146.02

OH Megamasers in External Galaxies. *J. Darling.* 2003, The Astrochemistry of External Galaxies, IAU 25, JD 21

The Green Bank Telescope OH Megamaser Survey. B. Kent, J. Braatz, & *J. Darling.* 2002, AAS Meeting 201, #52.16

The Arecibo OH Megamaser Survey. *J. Darling.* 2001, AAS Meeting 199, #35.05

Observing OH Megamasers with the Upgraded Arecibo Telescope. *J. Darling* & R. Giovanelli. 2001, AAS Meeting 198, #89.03

OH Megamasers: Luminous Radio Beacons of Merging Galaxies. *J. Darling* & R. Giovanelli. 2001, AAS Meeting 198, #34.05

A Survey of Lyman Break Galaxies Associated with Damped Lyman Alpha Systems at z $\sim$ 3. J. Cooke, A. M. Wolfe, E. Gawiser, J. X. Prochaska, & *J. Darling.* AAS Meeting 198, #54.10 (2001)

The Arecibo OH Megamaser Survey and the Galaxy Merger Rate. *J. Darling*, and R. Giovanelli. 2000, AAS Meeting 196, #51.01

Optical/Infrared Site Survey in the High Atacama Desert. R. Giovanelli, *J. Darling*, M. Sarazin, S. Eikenberry, B. Hoffman, M. Swain, J. Yu, P. M. Harvey, A. Otarola, and G. Valladares. AAS Meeting 193, #11.02 (1999)

High-Redshift Quasars and Other Peculiar-Color Objects in DPOSS. S. G. Djorgovski, S. C. Odewahn, R. R. Gal, R. R. De Carvalho, A. Kelly, J. Kollmeier, E. Kartalov, *J. Darling*, and V. Desai. AAS 192, #55.22 (1998)

Galaxy Companions of Quasars at $z > 4$: Formation of Protocluster Cores?. S. G. Djorgovski, K. R. Banas, S. C. Odewahn, R. R. Gal, M. A. Pahre, R. R. de Carvalho, V. Desai, & *J. Darling.* 1997, BAAS, 191, #95.07

Discovery of 6 Bright Quasars at $z > 4$ From Digitized POSS-II. *J. Darling*, R. R. de Carvalho, J. Kennefick, & S. G. Djorgovski. 1995, BAAS, 187, #84.17

TEACHING AND OUTREACH

Outreach. (August 2010) Public talk on "Water in the Universe," TEDx Boulder

Instructor. (Fall 2006–present) University of Colorado. ASTR 1120/1200 "General Astronomy: Stars and Galaxies," ASTR 2840 "Independent Study," ASTR 3740 "Relativity and Cosmology," ASTR 5110 "Internal Processes in Gases," ASTR 5110 "Atomic and Molecular Processes," ASTR 4020 "Senior Practicum," ASTR 3520 "Astronomical Spectroscopy" (assisting J. Bally), Faculty Research Seminar for new graduate students

High School Mentor. (Spring 2011–present) Weekly meetings with Cole Hugelmeyer. Science project mentor for Andrew Dewey.

Mentor. (Fall 2006–Summer 2011) Work with graduate student Kyle Willett on Spitzer programs "The Astrophysics of OH Megamasers" and "Compact Symmetric Objects" (the latter with John Stocke) and on NSF program "Extragalactic OH Maser Astrophysics: From Andromeda to the Peak of Cosmic Star Formation." PhD in 2011.

Mentor. (Spring 2007–present) Work with graduate student Benjamin Zeiger on formaldehyde and other molecules applied to galaxy evolution and cosmology (NSF program "Formaldehyde: A Unique Probe of Galaxy Evolution and Cosmology").

Mentor. (Spring 2008–present) Work with graduate student Ting Yan on searches for redshifted HI 21 cm and molecular absorption (NSF program "Cosmological Changes in Fundamental Constants of

Nature").

Mentor. (Spring 2009–present) Work with graduate students Adam Ginsburg and Cara Battersby on formaldehyde and radio recombination line studies of Galacitc star-forming cores.

Mentor. (Fall 2009) Work with graduate student Anthony Smith on formaldehyde mapping in nearby galaxies. (NSF program "Formaldehyde: A Unique Probe of Galaxy Evolution and Cosmology").

Mentor. (Fall 2010–present) Work with graduate student Amandeep Gill on formaldehyde and OH megamasers (NSF program "Formaldehyde: A Unique Probe of Galaxy Evolution and Cosmology").

Mentor. (Spring 2011–present) Work with graduate student Jordan Mirocha on the massive black hole-galaxy connection.

Mentor. (Fall 2006–present) Service on PhD thesis committees (K. Heng, F. Hearty, L. Earle, B. Keeney, A. Ginsburg, T. Yan, K. Willett, C. Battersby), PhD qualifying exam research advisor (K. Willett, B. Zeiger, J. Mirocha), PhD qualifying exam impartial chair (J. Khargharia, C. Battersby, A. Ginsburg, S. Skillman, S. Kohler, J. Kamenetzky), PhD qualifying exam committee member (A. Dove, K. O'Malia, T. Yan, P. Robinson, J. Henning, J. Lovering, E. Zekis).

Mentor. (May 2009–July 2011) Work with undergraduate student Kathryn Grasha on searches for neutral hydrogen absorption systems. (Kathryn graduated and has enrolled in a PhD program at the University of Massachusetts).

Mentor. (May 2010–December 2010) Work with undergraduate student Srikar Appana on the radio properties of galaxy groups.

Mentor. (May 2007– May 2009) Work with undergraduate student Erin Macdonald on senior thesis "The ALFALFA Neutral Hydrogen Absorption Pilot Project" (Erin graduated with honors and has enrolled in a PhD program at the University of Glasgow).

Mentor. (Summer 2004) Research Science Institute mentor for Daniel Thai on "A Search for Radio Probes of the Epoch of Reionization."

Instructor. (Spring 2003) University of Southern California. Astronomy 420: "Galaxies and Cosmology." (with P. Martini)

Outreach. Public sessions at Sommers Bausch Observatory. Class visits and special events work at local public schools (Longfellow Elementary, Pasadena High). Caltech SURF session chair for student presentations (2002, 2003). Work cited in popular articles in *Astronomy* (1/07) and *Astronomy Now* (UK; 8/02); "Ask a Scientist" article for Ithaca Journal. Info sessions for prospective graduate students.

John S. Knight Writing Program Teaching Assistant. (Spring 1998, 1999) Cornell. Astro 202: "Our Home in the Solar System."

John S. Knight Writing Program Teaching Assistant. (Fall 1997, 1998) Cornell. Astro 201: "Our Home in the Universe."

Teaching Assistant. (Spring 1997) Cornell. Astro 102/104: "Our Solar System." Led recitation sections, wrote and graded problem sets and exams.

SURF Program Peer Coach. (6/95–10/95) Caltech. Advised SURF students on research presentations.

SELECTED TALKS

Mining the Sky with WISE: Extreme Starbursts Spoofing HI and Other Oddities (10/11) Contributed talk for "Through the Infrared Looking Glass: A Dusty View of Galaxy and AGN Evolution" meeting, Pasadena, CA

The Proper Motion of the Andromeda Galaxy: The Keystone of Local Group Dynamics (3/11) "Building on New Worlds, New Horizons: New Science from Sub-millimeter to Meter Wavelengths" meeting, Santa Fe, NM

Lessons from Low-Frequency Spectral Line Observations (10/10) Contributed talk for "Robotic Science From the Moon" conference, Boulder, CO

Physical Molecular Probes of Star-Forming Galaxies (07/10) Contributed talk for "Molecules in Galaxies" conference, Oxford, UK

Lessons About Star Formation and Merging from Molecules and Dust (02/10) Contributed talk for "Infrared Emission, ISM, and Star Formation" conference, Heidelberg, Germany

Lessons About Star Formation and Merging from Molecules and Dust (09/09) Contributed talk for "Assembly, Gas Content and Star Formation History of Galaxies", The Fourth North American ALMA Science Center Conference, Charlottesville, VA

Redshifted OH Lines with SKAMP: Detection and Science (09/09) *Invited talk* for Science with SKAMP: Widefield Spectroscopy of the Southern Radio Sky, Molonglo Observatory, Australia.

Hydrogen 21 cm Absorption Line Searches and Studies with SKAMP (09/09) *Invited talk* for Science with SKAMP: Widefield Spectroscopy of the Southern Radio Sky, Molonglo Observatory, Australia.

Cosmic Evolution of Physical Constants: Precision Astronomical Measurements and the Search for High Redshift Molecules (04/09) Colloquium, University of Kentucky (Physics)

Molecular Pathologies: Probes of Galaxy and Black Hole Evolution, Cosmology, and Fundamental Physics Colloquium, UC Santa Cruz (5/10), British Columbia (10/09), Ohio State (5/09), University of Kentucky (4/09), Cornell (10/06), U Wyoming (10/06)

A Formaldehyde Deep Field with the EVLA: a Powerful New Probe of Galaxy Evolution and Cosmology (12/08) *Invited talk* for "The EVLA Vision: Galaxies Through Cosmic Time" NRAO, Socorro, NM

Extragalactic Molecular Spectroscopy (05/08) *Invited talk* for "Spectroscopy with CCAT: Science and Instrumentation Opportunities" U Colorado at Boulder

Redshifted Extragalactic Molecular Lines (09/07) *Invited talk* for "Frontiers of Astronomy with the World's Largest Radio Telescope" Washington, D. C.

Masers in Starburst Galaxies (03/07) *Invited review* for IAU Symposium 242 "Astrophysical Masers and Their Environments" Alice Springs, Australia

Pathologies as Probes: Tunneling, Masing, and Dasing Insights into Galaxy and Black Hole Evolution, Cosmology, and Fundamental Physics Colloquium, U Colorado Boulder (2/06)

Are Constants Constant? A New Approach to Precision Measurement of the fine Structure Constant JILA Astrophysics Lunch Seminar, U Colorado Boulder (9/05)

The OH Molecule as a Probe of Galaxy Evolution and Cosmology Colloquium, U Washington (2/04), U Colorado Boulder (3/04), UC Berkeley (3/04), Lawrence Livermore National Laboratory (3/04), NRAO Socorro (10/04), Spitzer Science Center (10/04), UC Santa Barbara (11/04), New Mexico State University (3/05)

Cosmic Evolution of the Fine Structure Constant: Microwave Measurement Techniques, New Results, and Future Prospects (2/04) Physics Seminar, U Washington

OH Megamasers (11/03) *Invited talk* for "40 Years of Scientific Discovery at Arecibo," Arecibo

OH Megamasers (07/03) *Invited review* for IAU JD 21, "Astrochemistry of External Galaxies," Sydney

OH Megamasers: Discoveries, Insights, and Future Directions (06/03) *Invited review* for "Future Directions in High Resolution Astronomy: The 10th Anniversary of the VLBA," Socorro

OH Megamasers: Luminous Tracers of Merging Galaxies, Extreme Starbursts, and Massive Black Holes (03/02) *Invited talk* for the NAIC Visiting Committee, Arecibo Observatory.

The Arecibo OH Megamaser Survey (11/01) Colloquium, National Radio Astronomy Observatory, Charlottesville.

Observing OH Megamasers with the Upgraded Arecibo Telescope (6/01) *Invited talk*, Special Session 89: Observing with the Upgraded Arecibo Telescope: Methods and Recent Results, AAS Meeting 198, #89.03

The Arecibo OH Megamaser Survey: Detecting Radio Beacons of Merging Galaxies. (7/00) Colloquium, NRAO Green Bank.

OH Megamasers at High Redshift and the Galaxy Merger Rate. (2/00) Contributed talk, Science with the Square Kilometer Array, NAIC.

Sleepless on the Altiplano: An Astronomical Site Survey. (4/99) Andes Seminar, Department of Earth and Atmospheric Sciences, Cornell.

EXTERNAL SERVICE, COMMITTEES, & PROFESSIONAL SOCIETIES

NAIC Users Scientific Advisory Committee. A National Astronomy and Ionosphere Center (Arecibo) advisory committee (2008–2010). Chair 2009–2010.

NRAO Student Observing Support Committee. (2008–)

NRAO Jansky Fellowship Committee. (2007–2010)

NRAO Users Committee. A NRAO advisory committee (2004–2007). Vice-Chair 2006–2007.

Advisory Panels. NAIC (Arecibo) program plan review for the NSF (2007)

Scientific Organizing Committees. "Boulder Extragalactic Astrophysics Retreat" (2011, chair); "Chicago-3 Community Workshop: Implementation of the SKA Program for the US Community" (2007)

Observatory Referee. Refereed proposals for NRAO for VLA and VLBA programs (2005–2006)

AAS Referee. Referee for the AAS Chambliss Astronomy Achievement Student Awards (2010–)

Square Kilometer Array Science Working Group. Contributing author to two chapters of the book "Science with the Square Kilometer Array," eds. C. Carilli & S. Rawlings, 2004, New Astronomy Reviews (Elsevier; Amsterdam).

Journal Referee. Refereed submissions for Phys. Rev. Lett., ApJ, MNRAS, and A&A.

Grant Referee. Refereed grant proposals for the U.S. Civilian Research and Development Foundation, for the Netherlands Organisation for Scientific Research (NWO), and for the Basic Research Department of the Ministry of Science and Environmental Protection, Republic of Serbia. Refereed NASA Postdoctoral Program (NPP) applications and two major NSF observing facility operations grant proposals.

Book Reviews. Review, feedback, and blurbs for Cambridge University Press.

American Astronomical Society. (1998–)

Sigma Xi. The Scientific Research Society (1995–)

UNIVERSITY SERVICE

Governance. CASA Executive Committee (2008–2010). APS Executive Committee (2010–).

APS Colloquium Committee. Chair (2007–2009)

APS Graduate Admissions Committee. (2008–)

APS Diversity and Graduate Student Concerns Committee. (2007–2008)

Observatory Referee. Refereed APS proposals for Apache Point (2006–2011). Chair (2009–2011)

CASA Salary Review Committee. (2007)

Cosmos Computing Lab Upgrade Committee. Chair (2007)

APS Observatories Committee. (2006–2007)

PRESS

Hit or Miss: Will the Andromeda Galaxy Collide with the Milky Way? *J. Darling.* 2011, NRAO eNews, Volume 4, Issue 10

SA Has the Whole World Starry-Eyed. R. Philp. 2010, South African Times, Oct 17

Starbursts Near and Far. Y. Gao. 2008, *Nature* News and Views, 452, 417

Water, Water Everywhere? *J. Darling.* 2008, NRAO eNews, Volume 1, Issue 4