

Karin M. Sandstrom

Curriculum Vitæ

Center for Astrophysics & Space Sciences
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Research Interests

- **Multiwavelength studies of the interstellar medium in nearby galaxies.** ISM phases; heating and cooling of gas and dust; feedback from stellar populations; chemical enrichment.
- **Star formation efficiency & the properties of molecular gas.** The influence of galactic environment on molecular gas abundance and properties.
- **The life cycle of interstellar dust.** Formation and destruction of dust; variations of dust properties as a function of metallicity; the impact of dust on ISM physics.

Education

- Dec. 2009 **University of California, Berkeley**
Ph.D. (Astronomy & Astrophysics)
Thesis: “Spitzer Space Telescope Observations of Dust in the Small Magellanic Cloud”
Adviser: Alberto D. Bolatto
- June 2004 **University of California, Berkeley**
M.S. (Astronomy & Astrophysics)
- June 2002 **Harvard College**
B.A. (Astronomy & Astrophysics)

Employment

- 2015 - present **University of California, San Diego**
Assistant Professor
- 2013 - 2015 **Steward Observatory, University of Arizona**
Bart J. Bok Postdoctoral Fellow
- 2011 - 2013 **Max Planck Institute for Astronomy, Heidelberg, Germany**
Marie Curie Postdoctoral Fellow
- 2009 - 2011 **Max Planck Institute for Astronomy, Heidelberg, Germany**
Postdoctoral Researcher

Awards

- 2020 **UC San Diego Academic Enrichment Program**
Outstanding Mentor Award
- 2018 **UC San Diego Office of Equity, Diversity and Inclusion**
UC San Diego Community Champion, Universitywide Award Recognition
- 2004 - 2008 **National Science Foundation**
Graduate Research Fellowship
- 2002 - 2003 **University of California, Berkeley**
The Berkeley Edge Professional Development Award

- 2002 - 2004 **University of California, Berkeley**
Graduate Opportunity Fellowship
- 2003 **Harvard College**
Thomas T. Hoopes Prize for Undergraduate Thesis
- 2002 **Harvard College, Department of Astronomy**
Leo Goldberg Award for Outstanding Undergraduate Research

Grants Awarded as P.I.

- 2018 - present NSF Astronomy and Astrophysics Research Grant - \$252,860
- 2017 - present Hubble Space Telescope Cycle 25 Grant - \$41,948
- 2017 - present National Radio Astronomy Observatory Student Observing Award - \$29,260
- 2017 - present Hubble Space Telescope Cycle 24 Grant - \$26,265
- 2017 - present NASA Astrophysics Data Analysis Program Grant - \$154,308
- 2016 - present NSF Astronomy and Astrophysics Collaborative Research Grant - \$397,363
- 2016 - 2019 Hubble Space Telescope Cycle 24 Grant - \$18,381
- 2016 - 2019 NASA Astrophysics Data Analysis Program Grant - \$193,518
- 2015 - 2018 Hubble Space Telescope Cycle 22 - \$312,695 (\$110,253 for UCSD)
- 2011 - 2014 Deutsches Zentrum für Luft- und Raumfahrt Grant - €83,662
- 2011 - 2013 Marie Curie International Incoming Fellowship - €156,042

Observing Time Awarded as P.I.

- 2020 **Keck Observatory (2020B)** - 1 night
“Mapping Outflows and the Inner CGM with KCWI”
- 2020 **Keck Observatory (2020A)** - 2 nights
“Mapping Outflows and Metallicity Gradients in Starbursting Galaxies with KCWI”
- 2019 **Keck Observatory (2019A)** - 2 nights
“A New View of the Chemical Evolution of Nearby Galaxies with the Keck Cosmic Web Imager”
- 2018 **Keck Observatory (2018B)** - 2 nights
“A New View of the Chemical Evolution of Nearby Galaxies with the Keck Cosmic Web Imager”
- 2017 **Very Large Array (2017A)** - 26 hours
“The Dust-HI-Star Formation Connection Across the Local Universe”
- 2017 **Keck Observatory (2017B)** - 1 night
“KCWI Observations of Star Formation, Feedback and Chemical Enrichment in NGC 3627”
- 2016 **Atacama Large Millimeter Array (Cycle 4)** - 11.9 hours
“Revealing the Cause of Starburst-Like Conversion Factors in Nearby Galaxy Centers”
- 2015 **Very Large Array (2016A)** - 36 hours
“The Dust-HI-Star Formation Connection Across the Local Universe”
- 2015 **Atacama Large Millimeter Array (Cycle 3)** - 10.5 hours
“SMC B1 is the New Perseus: The Relationship Between Av and CO at Low Metallicity”
- 2015 **APEX (ESO P95A)** - 34 hours

- “The Supercam Large Magellanic Cloud Survey”
- 2015 **ARO 12m Telescope (2015A)** - 11 hours
“Anchoring Herschel-FTS CO Ladders with CO(1-0) from the ARO 12-m”
- 2014 **Hubble Space Telescope (Cycle 22)** - 54 orbits
“A New View of Dust at Low Metallicity: The First Maps of SMC Extinction Curves”
- 2014 **Atacama Large Millimeter Array (Cycle 2)** - 3.1 hours
“Resolving Conversion Factor Variations in the Center of NGC 3351”
- 2014 **Very Large Array (2014B)** - 98 hours
“The Dust-HI-Star Formation Connection Across the Local Universe”
- 2014 **ARO Submillimeter Telescope (2014B)** - 82 hours
“Warm Molecular Gas in Nearby Galaxies Constrained by 13CO”
- 2014 **Very Large Array (2014A)** - 56 hours
“The Dust-HI-Star Formation Connection Across the Local Universe”
- 2013 **SOFIA (Cycle 2)** - 3.3 hours
“Spectrally Resolved [CII] Emission in M31: The Origin of [CII] from Metal-Rich Star-Forming Galaxies”
- 2011 **Herschel Space Observatory (OT2)** - 34.7 hours
“[CII] Observations of the Unexplored Atomic Gas-Rich ISM in Nearby Galaxies”
- 2011 **Herschel Space Observatory (OT2)** - 9.8 hours
“Hidden Dust in the Core-Collapse Supernova Remnant E0102”
- 2011 **ESO Very Large Telescope** - 1.4 nights
“Understanding the Nature of Polycyclic Aromatic Hydrocarbons in the Small Magellanic Clouds with 3.3 micron Imaging”
- 2011 **Calar Alto 3.5m** - 7 nights
“The Energy Budget of Massive Star Formation in Andromeda”
- 2010 **Herschel Space Observatory (OT1)** - 47.1 hours
“ISM Heating and Cooling in Massive Galaxies: The Andromeda Galaxy as Fundamental Calibrator”
- 2009 **CARMA** - 24 hours
“Picking up the Pieces of PAHs in NGC 7023”
- 2002 **Hubble Space Telescope** - 1 orbit
“UV Spectroscopy of the Hot, He-Core White Dwarf in HR 1608”

Graduate Students Supervised

- 2019 - present **Yushuan (Eltha) Teng** - PhD in progress, UC San Diego
- 2018 - present **Ryan Rickards Vaught** - PhD in progress, UC San Diego
- 2016 - present **I-Da Chiang** - PhD in progress, UC San Diego
- 2015 - 2020 **Petia Yanchulova Merica-Jones** - PhD (April 2020), UC San Diego
Currently: Postdoctoral Researcher at Space Telescope Science Institute
- 2011 - 2015 **Maria Kapala** - PhD (July 2015), International Max Planck Research School, University of Heidelberg
Currently: Data Scientist, Jumo.world, Cape Town, South Africa

Undergraduate Students Supervised

- 2019 - present **Megan Li** - BA in progress, UC San Diego
- 2017 - present **Cory Whitcomb** - BA (2019), UC San Diego
Currently: Post-Baccalaureate Researcher
- 2019 - 2020 **Xuce Niu** - visiting undergraduate student, UC San Diego
Currently: Graduate Student at University of Florida
- 2015 - 2018 **Bethany Ludwig** - BA (2018), UC San Diego
Currently: Graduate Student at University of Toronto

Postdoctoral Researchers Supervised

- 2017 - 2020 **Jeremy Chastenet**
Currently: Postdoctoral Fellow at Ghent University
- 2015 - 2017 **L. Clifton “Cliff” Johnson**
Currently: CIERA Fellow, Northwestern University

UC San Diego Teaching

- **Physics 163: Galaxies and Quasars**
 - Winter 2021 (planned), Spring 2020, Winter 2019
- **Physics 224: Interstellar Medium**
 - Winter 2020, Spring 2018, Spring 2016
- **Physics 239: Radiative Processes in Astrophysics**
 - Fall 2020, Fall 2018, Fall 2016
- **Physics 7: Galaxies & Cosmology**
 - Winter 2018, Winter 2017, Winter 2016

Other Teaching

- 2008 **University of California, Berkeley**
Graduate Student Instructor for Astronomy 122 “Infrared Laboratory”
- 2005 **University of California, Berkeley**
Teaching Assistant for graduate level Astronomy 216 “Interstellar Medium”
- 2004 **University of California, Berkeley**
Graduate Student Instructor for Astronomy 149 “Planetary Astrophysics”
- 2003 **University of California, Berkeley**
Graduate Student Instructor for Astronomy 7a “Introductory Astrophysics”
- 2002 - 2003 **Prison University Program at San Quentin**
Volunteered to teach physics, math and astronomy
- 2002 - 2003 **University of California, Berkeley**
Graduate Student Instructor for Astronomy 10 “Introduction to General Astronomy”

University & Department Service

- 2019 - present Organizer of Undergraduate Research Skills workshop series for Physics transfer students
- 2019 - present Organizer of Center for Astrophysics and Space Sciences Seminar Series
- 2019 - present Member of the Graduate Advising Committee
- 2018 - present Co-chair of Physics Department Undergraduate Advising Committee

- 2016 - present Faculty Advisor for Undergraduate Astronomy Club
- 2016 - present Member of Standing Committee on Research Personnel Advancement for the Center for Astrophysics and Space Sciences
- 2017 - 2018 Member of Division of Physical Sciences Excellence Search Review Committee
- 2017 - 2018 Member of Divisional Advisory Committee for the Task Force on the Status of Women in the Physical Sciences
- 2016 - 2017 Member of Physics Department Excellence search committee
- 2016 - 2017 Member of Physics Department LPSOE search committee
- 2016 - 2017 Member of Graduate Admissions Committee for Physics Department
- 2016 - 2019 Faculty Advisor for the Undergraduate Women in Physics group
- 2015 - 2016 Member of Physics Department Outreach/Diversity Committee
- 2015 - 2017 Member of Physics Department Committee on Education Policy

Professional Service

- 2019 - present Member of the Scientific Organizing Committee for “Illuminating the Dusty Universe: A Tribute to the Work of Bruce Draine”
- 2019 - present Member of the panel on “Interstellar Medium, Star, and Planet Formation” for the National Academy of Sciences Astro2020 Decadal Review
- 2018 - present Member of the Mikulski Archive for Space Telescopes Users Group
- 2018 - present Member of the UC Keck Time Allocation Committee
- 2018 - present Member of ALMA Science Review Panel
- 2011 - present Referee for ApJ, MNRAS, A&A, and Nature Astronomy
- 2018 Member of Scientific Organizing Committee for “Cosmic Dust (R)evolution” Symposium for the European Week of Astronomy and Space Science 2019
- 2018 Member of Scientific Organizing Committee for “ASTRO3D 2019” Conference
- 2018 Member of Scientific Organizing Committee for “Dusting the Universe” Conference
- 2016 - 2018 Member of NRAO Science Review Panel
- 2016 - 2019 Member of Science and Technology Definition Team for NASA Far-IR Surveyor mission and Science Working Group co-lead
- 2015 - 2019 Co-chair for Nearby Galaxies Working Group for the “Far IR Surveyor Workshop”
- 2015 May Reviewer for NSF Astronomy and Astrophysics Grants
- 2014 Dec Co-Organizer of “Observations of Dust in Galaxies” Workshop in Tucson, AZ
- 2013 July Co-Organizer of “The Phases of the ISM” Conference in Heidelberg, Germany
- 2012 - 2016 Science Coordinator for KINGFISH Herschel Key Program
- 2012 Reviewer for NASA Astrophysics Data Analysis Program

Professional Talks — Invited

- 2019 Oct Colloquium at the Ohio State University - Columbus, OH
- 2019 Oct Colloquium at the University of Massachusetts, Amherst - Amherst, MA
- 2019 Sep Invited talk at “KIAA Forum on Gas in Galaxies” - Beijing, China
- 2019 May Cosmology Seminar at UC Davis - Davis, CA

2019 Apr Australia National University Colloquium - Canberra, Australia

2018 Nov Invited Review talk at “Hendrik van de Hulst Centennial Symposium: The Interstellar Medium of Galaxies” - Leiden, Netherlands

2018 June Plenary Talk at “Astrophysical Frontiers in the Next Decade and Beyond” - Portland, OR

2018 June Invited talk at “Cosmic Dust” - Copenhagen, Denmark

2018 May Colloquium - NASA Jet Propulsion Laboratory - Pasadena, CA

2017 Nov Colloquium - San Diego State University - San Diego, CA

2017 Nov Invited talk at “Plumbing Star Formation Rates in the Age of JWST” - College Station, TX

2017 Oct Colloquium - University of Victoria Colloquium - Victoria, Canada

2017 Oct Colloquium - Dominion Astrophysical Observatory - Victoria, Canada

2017 Oct Colloquium - University of British Columbia - Vancouver, Canada

2017 Oct Colloquium - University of Florida - Gainesville, FL

2017 May Colloquium - Lowell Observatory - Flagstaff, AZ

2017 Jan Invited talk at “Star Formation and Nearby Galaxies with JWST” - Pasadena, CA

2016 Sep Invited talk at “Half a Decade of ALMA: Cosmic Dawns Transformed” - Indian Wells, CA

2016 July Invited talk at “Star Formation in Different Environments” - Quy Nhon, Vietnam

2016 Feb Invited talk at “Astrophysics with the SPHEREx All-Sky Spectral Survey” - Pasadena, CA

2015 Dec Colloquium - Space Telescope Science Institute

2015 Nov Colloquium - University of California, Berkeley

2015 Oct Astrophysics Seminar - University of California, Irvine

2015 June Invited talk at “Far IR Surveyor Workshop” - Pasadena, CA

2015 Apr Colloquium - Massachusetts Institute of Technology

2015 Mar Invited talk at “Dissecting Galaxies Near and Far: High Resolution Views of Star Formation and the ISM” - ESO Santiago

2015 Mar Colloquium - University of Toronto

2015 Mar Colloquium - University of Colorado, Boulder

2014 Dec Colloquium - University of California, Los Angeles

2014 Nov Colloquium - SOFIA Science Center

2014 Oct Colloquium - NRAO Charlottesville

2014 Oct Colloquium - University of Wisconsin, Madison

2014 Sep Invited Review talk at “The Role of Hydrogen in the Evolution of Galaxies” - Kuching, Malaysia

2014 May Invited talk at “Community Workshop to Plan the Future of Far-Infrared Space Astrophysics” - NASA Goddard

2014 Apr Tea Talk - Caltech

2014 Apr Invited talk at “Fire Down Below: The Impact of Feedback on Star and Galaxy Formation” - KITP, Santa Barbara, CA

2014 Apr Colloquium - NRAO Socorro
 2014 Mar Colloquium - Lowell Observatory
 2014 Feb Colloquium - Steward Observatory/NOAO
 2014 Jan Colloquium - University of Texas, Austin
 2014 Jan CASS Seminar - University of California, San Diego
 2013 Nov Colloquium - University of Toledo
 2013 Oct Blackboard Colloquium - ITA, Heidelberg
 2013 Mar Colloquium - San Francisco State University
 2013 Mar Colloquium - University of North Carolina, Chapel Hill
 2013 Feb Fachbeirat Panel Review talk - MPIA Heidelberg
 2012 June Invited talk at “The Great Andromeda Galaxy Workshop” - Princeton, NJ
 2011 Sep Colloquium - ESO Santiago
 2010 Nov Colloquium - ITA, Heidelberg
 2009 Mar Colloquium - Cornell University

Professional Talks — Other

2019 Apr Seminar at Swinburne University - Melbourne, Australia
 2014 Mar Contributed talk at “Gas and Stars in Galaxies: A Multi-Wavelength 3d Perspective”
 - ESO Garching, Munich, Germany
 2014 Jan Contributed talk at 223rd AAS Meeting - National Harbor, MD
 2013 June Contributed talk at “The Regulation of Star Formation in Molecular Gas” - Ringberg
 Castle, Germany
 2013 Mar Contributed talk at “Infrared and Sub-mm Probes of Gas in Galaxies” - Pasadena, CA
 2013 Feb Contributed talk at “C+ as an Astronomical Tool” - Lorentz Center, Leiden,
 Netherlands
 2012 July Contributed talk at “Galactic Scale Star Formation” - Heidelberg, Germany
 2012 May Contributed talk at “Disc Galaxy Formation in a Cosmological Context” - MPIA,
 Heidelberg, Germany
 2011 June Contributed talk at “From Dust to Galaxies” - Paris, France
 2011 Feb Contributed talk at “Herschel and the Characteristics of Dust in Galaxies” - Lorentz
 Center, Leiden, Netherlands
 2011 Jan Contributed talk at the 217th AAS Meeting - Seattle, WA
 2010 July Contributed talk at “Molecules in Galaxies” - Oxford, United Kingdom
 2010 June Contributed talk at “PAHs and the Universe” - Toulouse, France
 2010 Apr Contributed talk at “From Stars to Galaxies” - Gainesville, FL
 2010 Feb Contributed talk at “Infrared Emission, ISM and Star Formation” - Heidelberg,
 Germany
 2010 Dec Wednesday Lunch Seminar - NRAO Socorro
 2010 Dec Laboratory for Millimeter-Wave Astronomy Seminar - University of Maryland, College
 Park
 2009 Mar Star Formation and ISM Seminar - University of California, Berkeley

- 2009 Jan Dissertation talk at the 213th AAS Meeting - Long Beach, CA
- 2008 Dec Stellar and Extragalactic Lunch Talk - NASA Goddard
- 2008 July Contributed talk at “IAU Symposium 256: The Magellanic System” - Keele, United Kingdom
- 2007 Jan Contributed talk at the 209th AAS Meeting - Seattle, WA
- 2002 Jan Contributed talk at the 199th AAS Meeting - Washington, DC

Outreach

- 2016 - present Mentor for the CAMPARE and Cal-Bridge programs (students include: Don Dixon, Yuri Rodea, Chris Juarez, Erika Gwin, Mathew Leon)
- 2004 - present Public Lectures (20+) for various groups, most recently Wavelength Brewery (July 2018) Riverside Astronomical Society (November 2019), San Diego Comic Fest (March 2020), and Orange County Astronomers (June 2020)
- 2020 June Panelist for Society of Physics Students Showcase on Undergraduate Research
- 2020 February Guest Lecture for UC San Diego Undergraduate Astronomy Club
- 2020 January Panelist for the Conference for Undergraduate Women in Physics at UC Irvine
- 2018 April Perspectives on Science Lecture for Point Loma Nazarene University
- 2018 Feb STEM Lecture Series at Mesa College presentation
- 2017 Nov Public Event for “A New Stellar Order” screening with local artist Melissa Walter
- 2017 Nov Inaugural Speaker at San Diego’s Astronomy on Tap
- 2017 Jan Lecturer for the Young Physicists Program
- 2015 - 2016 Volunteer for “Two Scientists Walk into a Bar”
- 2015 Sept Interviewed for UCTV video on interstellar dust
- 2015 - 2016 Faculty advisor and member of UCSD Conference for Undergraduate Women in Physics (CUWIP) Local Organizing Committee
- 2012 July Volunteer for MPIA Open House
- 2012 Apr Volunteer for MPIA Girl’s Day
- 2010 Volunteer for “Astronomie am Sonntag Vormittag”
- 2008 - 2009 Founder and Organizer of “Berkeley Astronomy Grad Student Public Lecture Series”
- 2007 Columnist for the Berkeley Science Review, Issue 13
- 2003 - 2007 Monthly Column “Notes from the Field” for the Friends of Galileo Newsletter
- 2002 - 2012 Annual Public Lecture for Friends of Galileo astronomy club in Longview, WA