PROF. CARA BATTERSBY

CONTACT INFORMATION

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RESEARCH INTERESTS

1) Star formation, gas dynamics, and the 3-D structure of our Galaxy's Central Molecular Zone (CMZ), 2) Mass and energy cycles in the CMZ, 3) clustered star formation and its potential variation with environment, and 4) the future of Far-IR astrophysics.

PROFESSIONAL PREPARATION

Associate Professor **August 2023 - present**
Department of Physics, University of Connecticut

Assistant Professor **August 2017 - August 2023**
Department of Physics, University of Connecticut

Research Associate **September 2017 - present**
Smithsonian Astrophysical Observatory

National Science Foundation (NSF) Postdoctoral Fellow **August 2016 - July 2017**
Harvard-Smithsonian Center for Astrophysics

Submillimeter Array (SMA) Postdoctoral Fellow **Sept. 2013 - July 2016**
Harvard-Smithsonian Center for Astrophysics

Ph.D. Astrophysics, University of Colorado, Boulder, CO, *Adviser: John Bally* **2013**
"The Structure, Kinematics, and Evolution of Massive Star and Cluster Forming Regions"

M.A. Astronomy, Boston University, *Adviser: Jim Jackson* **2008**

B.S. Physics & Astronomy, University of Massachusetts Amherst **2006**
summa cum laude, Advisers: Min S. Yun & Grant Wilson

PUBLICATIONS

Cara Battersby has an h-index of 44, is an author on 100 publications with a total citation count of 6,125 (computed February 2025 from the NASA Astrophysics Data Service Page). Complete publication list is on the following pages.

SELECTED HONORS, GRANTS, AND AWARDS

Summary: Cara Battersby has been awarded $3.0M in extramural funding to UConn as PI or co-PI on ten grants from NSF, NASA, NRAO, and the Templeton Foundation.

- **Nominated for the Blavatnik Award for Young Scientists** **2024**
  UConn nominates one young scientist in Physical Sciences and Engineering each year for the award
- **NASA Phase A Funding** **2024**
  for Probe Mission Concept "PRIMA (the Probe Infrared Mission for Astrophysics)," ($49k)
- **Co-I: JWST Observing Proposal** **2024**
  ""Identifying, counting, and mapping YSOs in Sgr B2: our Galaxy's most massive molecular cloud" ($91k)
- **Co-PI: National Science Foundation Astronomy and Astrophysics Grant** **2022**
  "Collaborative Research: ACES Galactic Center Mass Flow" ($232k)
  Veterans Research Supplement (VRS) Program ($47k) 2024

- **PI: NSF Early CAREER Faculty Award**, **2022**
  "CAREER: Shining STARs Amidst the Turbulence" ($697k)
- **PI: NASA Astrophysics Data Analysis Program Grant**, **2021**
  "3-D MC: Mapping Circumnuclear Molecular Clouds from X-ray to Radio" ($466k)
- **PI: National Science Foundation Astronomy and Astrophysics Grant**, **2021**
  "Uncovering the Seeds of Star Clusters across the Galaxy" ($389k)
- **UConn Internal Grants** ($72k total): *PI: UConn STARs Program Awarded under CLAS DEI Initiative $7250 in 2025, $5650 in 2024, $4k in 2022, Co-I: BRIDGE+ Program Awarded under the President's Commitment to Community Grant 2021 $13k, Scholarship Facilitation Fund: 2019 $1k, NFIP: 2017-2021 $5k total, Co-I: Provost's Open Educational Resources Award 2017 $10k, Co-I: Provost's Large Course Redesign Award 2017 $26k.*
- **Co-PI NASA SOFIA Archival Research Program** **2021**
  "IGNITES: Investigating Galactic Nuclear Infrared Thermal Evolution of young Stars" ($166k)
- **Robert H. Goddard Honor Award** (https://science.gsfc.nasa.gov/sci/awardswon) **2019**
  "For outstanding team performance resulting in the delivery of a scientifically compelling, executable, low-risk Origins Space Telescope mission concept."
- **PI: National Radio Astronomy Observatory** **2019**
  Student Observing Support Grant ($34k)
- **Co-PI: National Science Foundation Campus Cyberinfrastructure Grant** **2019**
  CC Compute: Shared Computing Infrastructure for Large-scale Science Problems ($400k)*
- **Co-I: NASA Balloon Mission:** **2019**
  ASTHROS: Astrophysics Stratospheric Telescope for High-spectral Resolution Observations at Submillimeter-wavelengths ($18k to UConn)
- **NASA Group Achievement Award** **2019**
  for the "substantial and effective scientific, technical, and management work in developing the Large Mission Concept Studies for the 2020 Astrophysics Decadal Survey."
- **Provost's Letter of Recognition for Teaching Excellence** **2017, 2018, & 2019**
- **Shortlisted (top 5 of candidates worldwide) for the** **2018**
  Nature Research Awards for Inspiring Science
- **PI: National Science Foundation Astronomy and Astrophysics Grant**, **2018**
  "3-D CMZ: Unveiling the Structure of our Galaxy's Central Molecular Zone" ($390k)
- **PI: Templeton Foundation Grant**, "BiteScis: K12 Research Brief Engagement Pilot" ($215k) **2017**
- **Appointed by NASA:** *Science & Technology Definition Team,* Origins Space Telescope **2016**

SELECTED PRESS

- 2025 Press Conference at the American Astronomical Society Press Conference Video, Announcement.
- 2025 UConn Today X-ray Echoes Reveal the 3D Structure of Molecular Clouds in our Galaxy's Center
- 2022 Astrobites: Writing Astrobites in Your Courses!
- 2022 CAREER Award Press: UConn Today: 2021-22 NSF CAREER Award Recipients, CT Mirror: UConn faculty winning NSF CAREER awards at record-breaking pace, UConn Today: UConn faculty winning NSF CAREER awards at record-breaking pace
- 2021 Scientific American: This Report Could Make or Break the Next 30 Years of U.S. Astronomy
- 2021 UConn Today: The Study of Big Data: How CLAS Researchers Use Data Science
- 2021 How Stuff Works: Gravitational Constant Is the "G" in Newton's Law of Universal Gravitation

- 2021 Ask a Scientist Podcast: Dr. Cara Battersby – Stars and the Universe
- 2021 Universe Today: The Core of the Milky Way is an Extreme Place
- 2021 Center for Astrophysics | Harvard & Smithsonian Weekly Science Update: Cold Dust Cores in the Central Zone of the Milky Way
- 2020 NASA Goddard Feature Piercing the Dark Birthplaces of Massive Stars with Webb
- 2019 Sky & Telescope Astronomers Dream Big, Consider Four Future Space Telescopes
- 2018 UConn Today Researcher Profile
- 2018 Nature Research Awards for Inspiring Science
- 2018 Forbes *NASA's Next Flagship Mission May Be a Crushing Disappointment for Astrophysics*
- 2017 UConn Eclipse Viewing in the News: *Hartford Courant: UConn Eclipse Viewing*; *Partial Eclipse, Complete Awe for CT*, *Patch.com: Eclipse Viewing Tips*; *Eclipse Event*; *It was Eclipse and Ice Cream*, *Stamford Advocate: Sky Gazers Ready for Solar Eclipse*
- 2017 phys.org *The Lifetimes of Massive Star-Forming Regions*
- 2016 phys.org *The Milky Way's central molecular zone*
- 2016 SciTechDaily *Astronomers Take A Closer Look at the Milky Way's Central Molecular Zone*
- 2016 Astronomy Now *Unravelling the Milky Way's Central Molecular Zone*
- 2016 United Press International *New study details skeleton of the Milky Way galaxy*
- 2015 astrobites *The Skeleton of the Milky Way*
- 2015 AAS Nova *Companions for "Nessie" in the Milky Way's Skeleton*
- 2015 Sky & Telescope *Making Massive Stars*
- 2015 space.com *Milky Way 'Bones Could Reveal Secrets About Our Galaxy*
- 2014 Sky & Telescope *Cooking up High-Mass Stars*

Selected Successful Observing Proposals

Co-I, 18 hours, James Webb Space Telescope (JWST) Cycle 3 **2024**
"Identifying, counting, and mapping YSOs in Sgr B2: our Galaxy's most massive molecular cloud"
Co-I, 9 hours, James Webb Space Telescope (JWST) Cycle 1 **2021**
"Star Formation along the Galactic Dust Ridge: The Brick and Cloud C"
Over 130 hours as Co-I on the Jansky Very Large Array (JVLA) **2013-2022**
Co-PI, 121 hours, Atacama Large Millimeter Array (ALMA) Large Program **2021**
"ACES: The ALMA CMZ Exploration Survey"
Co-PI, 119 hours, Atacama Large Millimeter Array (ALMA) Large Program **2019**
"ALMAGAL: ALMA Evolutionary study of High Mass Protocluster Formation in the Galaxy"
Over 150 hours as Co-I on the Atacama Large Millimeter Array (ALMA) **2013-2021**
PI, 550 hours, Submillimeter Array (SMA) **2014-2017**
"CMZoom: The SMA Legacy Survey of the Central Molecular Zone"
PI, 60 hours, IRAM 30-m **2015**
"Mapping the Bones of the Milky Way"
Co-I, 200 hours, Atacama Pathfinder Experiment (APEX) **2014**
"H_2CO Thermometry of the CMZ to understand its low star formation rate"

Invited Scientific Presentations

Summary: Cara Battersby has given 8 invited review/keynote talks, 58 invited conference presentations and colloquiua, and 16 invited public talks since 2013.

Invited Review Talks (8 since 2013):

- ALMA at 10 years Invited Conference Review Talk (12/05/23), Harvard-Heidelberg Star Formation Workshop Review Talk, Cambridge, MA (11/13/19), Kavli Institute of Astronomy and Astrophysics *Forum on Gas in Galaxies*, Peking, China (09/10/19), Oxford *Origins Space Telescope Meeting*, Oxford, UK (09/05/2018), EWASS *Star formation at the centre of the Galaxy*

Prague (06/26/2017), CIERA Fellows at the Frontiers at Northwestern (09/01/2016), Keynote speaker for *Mass Assembly from Clouds to Clusters* at the Sexten Center for Astrophysics, Italy (07/07/2014), BASH Symposium at the University of Texas Austin (10/07/2013).

Invited Conference Presentations and Colloquiua (61 since 2013):

- **2025:** Dartmouth College Physics & Astronomy Colloquium (01/10/25), Invited Speaker at STSCI Conference *"Inter+Stellar: Harnessing the Intersection Between Stars and the ISM"* (scheduled: 12-16 May, 2025), Invited Speaker at *"Stellar Origins"* conference in Vienna, Austria (scheduled: 15-19 Sept., 2025).
- **2024:** Space Telescope Science Institute (STSCI) in Baltimore, Maryland (02/28/24), University of New Hampshire (UNH) in Durham, NH (05/03/24).
- **2023:** Max Planck Institute for Astronomy in Heidelberg, Germany. Colloquium (09/15/23).
- **2022:** Max Planck Institute for Radio Astronomy in Bonn, Germany. Colloquium (Virtual - 07/01/22), Bath, Bristol and Cardiff - Great Western Seminar Series, UK (Virtual - 05/25/22), Pontificia Universidad Católica de Chile, Chile (Virtual - 04/26/22), Queen's University Astronomy Seminar, Canada (Virtual - 01/31/22).
- **2021:** Colby College (Virtual - 10/25/21), University of California at Santa Cruz Astrophysics Colloquium (Virtual - 05/05/21), University of Cologne Astrophysics Colloquium, Germany (Virtual - 04/26/21), American Museum of Natural History Astronomy Seminar (Virtual - 04/13/21).
- **2020:** 11th CMB-S4 Workshop: Cosmology and Astrophysics in the Next Decade Talk in the *Our Galaxy* Session (Virtual - 08/11/2020), NASA Decadal Studies Session at the American Astronomical Society (01/08/2020)
- **2019:** NASA SOFIA Science Center Colloquium (12/18/19), University of Toronto Astrophysics Colloquium (12/11/19), Purdue University Astrophysics Seminar (10/28/19), NASA Goddard Space Flight Center Colloquium (10/01/19), Max Planck Institute for Astronomy Koeningstuhl Colloquium, Germany (07/05/2019), University of Toledo Astrophysics Colloquium (04/18/2019), Origins Space Telescope Overview at the Center for Computational Astrophysics (06/21/19), University of Massachusetts Astrophysics Colloquium (04/11/2019), The Space Astrophysics Landscape for the 2020s and Beyond, Invited Overview and Panel Chair of *Extreme Star Formation and Time Domain in Astrophysics* (04/03/2019), Yale Astrophysics Colloquium (01/24/2019)
- **2018:** Brown University Astronomy Seminar (11/29/2018), MIT Astrophysics Colloquium (11/06/2018), University of Arizona Astrophysics Colloquium (10/4/2018), Harvard-Smithsonian Center for Astrophysics Galaxies & Cosmology Seminar (03/27/2018), Oxford Workshop on Giant Molecular Clouds Oxford, UK (03/12/2018), Caltech Astrophysics Colloquium (03/07/2018), Wesleyan Astrophysics Colloquium (02/28/2018), SMA Special Session at the American Astronomical Society meeting (01/08/2018).
- **2017:** Union of Radio Science General Assembly and Scientific Symposium (08/22/2017), Trinity College Physics Seminar (03/31/2017), National Radio Astronomy Observatory Charlottesville Astronomy Colloquium (02/09/2017), Far-IR Science Interest Group Webinar (02/02/2017).
- **2016:** National Radio Astronomy Observatory Socorro Astronomy Colloquium (12/02/2016), Harvard-Heidelberg Workshop on Star Formation Heidelberg, Germany (11/08/2016), SMA Science in the Next Decade Taipei, Taiwan (10/27/2016), University of Texas Austin Astronomy Colloquium (09/14/2016), Kavli Institute for Theoretical Physics Santa Barbara *The Cold Universe* (04/25/2016), DRAO Astronomy Colloquium Penticton, BC (03/01/2016), NRC Herzberg Institute for Astronomy Colloquium Victoria, BC (02/29/2016), University of Connecticut Physics Seminar (02/11/2016), University of California, Berkeley Astronomy Colloquium (02/04/2016),

Amherst College Physics and Astronomy Colloquium (01/26/2016),

- **2015:** Bates College Physics and Astronomy Colloquium (12/4/2015), University of Arizona Tucson FLASH and Origins Talks (11/13/2015), UMass Amherst Astronomy Colloquium (11/5/2015), IAU 'Scale-Free Processes' Focus Meeting Honolulu (08/13/2015), University of Florida, *Star & Planet Formation Workshop* (03/12/2015), American Museum of Natural History Colloquium, (02/05/2015).
- **2014:** National Radio Astronomy Observatory Filaments Workshop Charlottesville (10/10/2014), Boston University Astrophysics Seminar (10/14/2014), MIT Haystack Observatory Colloquium (07/24/2014), Yale University Seminar (04/07/2014).
- **2013:** University of Florida *ASTROWIN* (02/15/2013), University of Florida Seminar, (02/12/2013).

Invited PublicTalks (18 since 2016):

- Spirit of the Senses: Phoenix based arts, science, and cultural salon organization public talk (2/5/25), Westport Astronomical Society Public Talk (10/15/24), Orange County Astronomers Public Talk, https://ocastronomers.org/calendar/general-meeting-2024-02/ (02/16/24), Fromm Institute Lecture Series Winter 2024, Virtual (02/07/24), "Girls Who Code" club of Avon High presentation (05/23/22), Avon High School Classroom Presentation (12/09/19), Early College Experience Presentation to Visiting High School Teachers (09/30/19), Manchester Public Library (08/21/19), UConn Astronomy Association (04/24/2019), Wachusett Science Seminar at Holden public High School, MA (11/13/2018), Science Seminar at Avery Heights Assisted Living, Hartford, CT (10/31/2018), Sky Scrapers Amateur Astronomy Club, RI (05/11/2018), Keene Public Library in New Hampshire (03/09/2017), Sturbridge Rotary Club Massachusetts (01/30/2017), Arlington Retired Men's Club Massachusetts (10/12/2016), Aldrich Astronomical Society Massachusetts (10/08/2016), Astronomy on Tap in Cairns, Australia, (07/20/2016), Center for Astrophysics Observatory Nights, Posted online: The Wild West of Star Formation (04/21/2016).

Research Mentorship

Postdoctoral Fellows Advised:

Summary: Cara Battersby has advised 4 postdoctoral researchers.

- Dr. H Perry Hatchfield - Postdoc leading our NASA SOFIA Program *"IGNITES: Investigating Galactic Nuclear Infrared Thermal Evolution of young Stars"* program (July 2022 - January 2023)
- Dr. Samantha Brunker - Postdoc leading our NASA ADAP program *"3-D MC: Mapping Circumnuclear Molecular Clouds from X-ray to Radio"* (June 2022 - present)
- Dr. Daniel Walker - Postdoc leading our NSF program *"3-D CMZ: Unveiling the Structure of our Galaxy's Central Molecular Zone"*. (July 2020 - April 2022). Now an astrophysicist at the UK ALMA Regional Center.
- Dr. Molly Gallagher - Postdoc who joined to work the group to lead our NSF program *"3-D CMZ: Unveiling the Structure of our Galaxy's Central Molecular Zone"* but had to resign early due to medical issues. (Fall 2019).

Students Advised and Co-Advised:

Summary: Cara Battersby has advised or co-advised 40 research students since 2016.

- **Five Current Graduate Students:**
  - Jonah Baade - UConn Graduate Student - *"Simulations of our Galaxy's Central Molecular Zone"* (Spring 2025 - present)
  - Samantha Adams - UConn Graduate Student - *"Using JWST to understand our Galaxy's Central Molecular Zone"* (Spring 2025 - present)
  - Jack Sullivan - UConn Graduate Student - *"Synthetic Observations of the Central Molecular*

Zone with POLARIS" (Summer 2024 - Spring 2025)
  - Dani Lipman - UConn Graduate Student - *"3-D CMZ: Uncovering the Structure of our Galaxy's Central Molecular Zone"* (Fall 2020 - present)
  - Jennifer Wallace - UConn Graduate Student - *"Cataloging High-Mass Star Formation from the Galactic Disk to the Galactic Center"* (Spring 2020 - present)
- **Eight former Graduate Students**
  - Rachel Lee - UConn Graduate Student - *"Tracing Protostellar Mass Accretion through Far-IR Variability"* (Fall 2022 - Fall 2024)
  - Russell Bentley - UConn Graduate Student Collaborator - *"Simulations of our Galaxy's Central Molecular Zone with AREPO"* (Fall 2022 - Spring 2024), moved on to a Computer Science PhD program at Stony Brook
  - H Perry Hatchfield - UConn Graduate Student - *"Star Formation in the Central Molecular Zone"* (Summer 2017 - Spring 2022), completed PhD in Spring 2022.
  - Yiyan Kuang - UConn Graduate Student - *"Simulated Observations of the Core Mass Function"* (Fall 2020), short-term project.
  - Steven Walczyk - UConn Graduate Student - *"Tidal Compression of Clouds in the Central Molecular Zone"* (Spring 2019 - Fall 2019), short-term project.
  - Mark Graham - Southampton Master's Student at Harvard - *"Extreme Star Formation in the Center of Our Galaxy"* (2014 - 2015), completed Master's in 2015.
  - Catherine Zucker - Harvard Graduate Student (primary adviser Alyssa Goodman) - *"Milky Way Bones"* (2014 - 2018), completed PhD in 2020.
  - Brian Svoboda - Graduate Student at University of Arizona (primary adviser Yancy L. Shirley) - *"The Nature of Starless Clumps"* (2013 - 2018), completed PhD in 2018.
- **Twenty seven UConn Undergraduate Students:** Casey Provitera (Spring 2025-present) Brendan Dubois (Spring 2024 - present), Sophia Kempe (Spring 2024 - present), Simon Correa (Spring 2024 - present), John Trujillo (Fall 2023 - present), Xavier Braun (Fall 2022 - present), Sangeeta Kuchibhotla (Fall 2022 - Spring 2024), Taevis Kolz (Spring 2022 - Spring 2024), Stefania Schuler (Fall 2021 - Spring 2025), Lexie DeMarco (Summer 2021 - Spring 2022), Danya Alboslani (Spring 2021 - Summer 2025), Eric Hilhorst (Spring 2020 - Spring 2021), Hannah Koziol (Spring 2020 - Spring 2022), Payal Shah (Spring 2020 - Spring 2022), Eddie Herndon (Fall 2019 - Spring 2021), Sean Oh (Fall 2019 - Spring 2020), Bryan Garcia-Medina (Fall 2019 - Spring 2020), Jonah Cerbin (Spring 2019), Joseph Giangregorio (Fall 2017 - Spring 2019), Alice Hall (Spring 2018 - Summer 2019), Aisha Massiah (2018, Spring 2021), Brian Zelicskovics (Spring 2018), Anthony (Josh) Machado (Spring 2018 - Summer 2020), Alexa Abul (Fall 2017 - Spring 2018), Christopher Annuzzi (Fall 2017 - Fall 2018), Cooper Biancur (Fall 2017 - Spring 2018), Stephanie Santillo (Fall 2017).
- **Seven other Undergraduate and High School Students:** Elizabeth Gutierrez - Harvard Banneker Summer Student (co-adviser: Meredith MacGregor) (2017), Emma Kleiner - Nyack High School Student (2016-2018), Irene Vargas-Salzar - Harvard Summer REU student (2016), Dennis Lee - Harvard undergraduate student (2015 - 2016), Jimmy Castaño - Harvard undergraduate student (2015 - 2016), Liz Gehret - Harvard Summer REU student (2015 - 2016), AJ Cohn - Harvard undergraduate student (2015 - 2017).

TEACHING

Developed and Instructed a new Introductory Physics Course for Undergraduate Non-Majors:
PHYS 1040QE: Cosmic Origins of Life, University of Connecticut, Storrs, CT.
• Currently teaching Spring 2025.
• Taught Spring 2024. *SET median scores of 5.0 for instructor and course Spring 2024*

Developed and Instructed an Advanced Physics Course for Undergraduate Majors and Grad-

uate Students: PHYS 4720/6720: Galaxies and the Interstellar Medium, University of Connecticut, Storrs, CT.
• Taught Fall 2024 *SET median scores of 4.0 for instructor and course*
• Taught Spring 2023 *SET median scores of 5.0 for instructor and course*
• Taught Spring 2021 online. *SET median scores of 5.0 for instructor and course*

Helped to Overhaul and Instructed a Large, Interactive Physics Course for Non-Majors: PHYS 1025Q: Introductory Astronomy, University of Connecticut, Storrs, CT.
• Taught Spring 2022. *SET median scores of 5.0 for instructor and 4.5 for course Spring 2022*
• Taught Spring 2020. *SET median scores of 5.0 for instructor and course Spring 2020*
• Taught Spring 2019. *SET median scores of 5.0 for instructor and course Spring 2019*

Developed and Instructed a New Interactive Physics Course for Majors: PHYS 2701: The Foundations of Modern Astrophysics, University of Connecticut, Storrs, CT.
• Taught Fall 2017, Fall 2018, Fall 2019, Fall 2021. *SET median scores of 5.0 for instructor course 2017, 2018, 2019, 2021.*
• Six student Astrobites published based on work in this class. The Astrobite activity for this class was highlighted on their website: Writing Astrobites in Your Courses!

Additional Teaching:
***Measuring the Stars* for the Astronomy Summer Course at the Stedu Association,**
a youth-led non-profit that is focused on making STEM education more accessible.
• Taught July 16, 2021.

Big Data and Computation Workshop
• Taught at the UConn Summer BRIDGE+ Program August 19, 2021 • Guest lecture in the PHYS 2200 Computation Physics, November 3, 2021

The Holistic STEMinist: Work Life Balance
• Taught at the UConn Summer BRIDGE+ Program August 24, 2021 • Astronomy Seminar Series Professional Development Workshop, December 8, 2021

Selected Service

UConn Service:

- **Advising and Mentorship:**
  - Founder and Leader of the UConn STARs Program, Spring 2022-present.
  - Co-founder of the UConn Graduate BRIDGE+ Program, Summer 2021.
  - Cientifico Latino Graduate Student Mentoring Initiative (GSMI) Mentor Fall 2020, Fall 2021
  - Informal Mentor (meet for career advice, navigating challenges, etc.) for tens of UConn graduate and undergraduate students in the Astronomy program (Fall 2017 - present)
  - Research Mentor to 25 UConn undergraduate students and 10 graduate students. Wrote over 100 reference letters for over 44 students and postdocs, including 40 UConn undergraduate and 4 UConn graduate students (Fall 2017-present)
  - UConn Physics Club Faculty Advisor (Fall 2018 - Spring 2022)
  - Undergrad Faculty Mentor for SPS Chapter (Spring 2019, 2020, 2021, 2022)
  - UConn Astronomy Association Faculty Advisor (2018 - present)
  - Organizer for Graduate Student Fellowship Information Presentation (Fall 2017 & 2018)
- **Student Project / Thesis Committees**
  - General Oral Exam Committee for Skyler Wright (02/26/25)
  - Dissertation Proposal Defense Committee Member for Niranjan Roy (05/05/24)
  - Dissertation Proposal Defense Committee Chair for Dani Lipman (04/29/24)

- General Oral Exam Committee for Elias Oakes (03/21/24)
- Dissertation Proposal Defense Committee Member for Logan Fries (04/28/23)
- General Oral Exam Committee for Niranjan Roy (04/14/23)
- Dissertation Proposal Defense Committee Member for Hugh Sharp (04/07/23)
- General Oral Exam Committee for Logan Fries (03/31/23)
- Dissertation Proposal Defense Committee Member for Meg Davis (03/10/23)
- General Oral Exam Committee for Matt Gebhardt (02/24/23)
- General Oral Exam Committee Chair for Dani Lipman (02/17/23)
- PhD Thesis Exam Committee Member for Gloria Fonseca Alvarez (06/08/22)
- Dissertation Proposal Defense Committee Member for J. Andrew Casey-Clyde (05/17/22)
- General Oral Exam Committee Chair for Jennifer Wallace (04/28/22)
- Dissertation Proposal Defense Committee Member for Bren Backhaus (04/18/22)
- PhD Thesis Exam Committee Chair for H Perry Hatchfield (04/08/22)
- University Scholar Program Committee Member for Nathan Wetherell (2020-2022)
- PhD Thesis Exam Committee Member for Mohammad Akhshik (02/04/22)
- Dissertation Proposal Defense Committee Member for Jonathan Mercedes-Feliz (01/24/22)
- Dissertation Proposal Defense Committee Member for Gloria Fonseca Alvarez (07/14/21)
- Master's Thesis Exam Committee Member for Nikko Cleri (03/18/2021)
- PhD Thesis Exam Committee Member for Yasaman Homayouni (02/26/2021)
- Dissertation Proposal Defense Chair for H Perry Hatchfield (04/25/2019)
- Dissertation Proposal Defense Committee Member for Mohammed Akhshik (11/02/2018)
- University Scholar Program Committee Member for Emmerson Dang (2017-2018)
- Dissertation Proposal Defense Committee Member for Yasaman Homayouni (05/19/2017)

- **Committees:**
  - CLAS Diversity, Equity, and Inclusion Committee (Fall 2024 - present)
  - Department of Physics Ombudsperson (Fall 2024 - present)
  - Faculty Search Committee Member (Fall 2023 - Spring 2024)
  - Department of Physics Advisory Committee (Spring 2024-present, Fall 2019 - Spring 2022)
  - Department of Physics Diversity Equity and Inclusion Committee (Fall 2024 - present)
  - Department of Physics External Relations and Outreach Committee (Fall 2024 - present)
  - Astronomy Seminar Committee Chair (Fall 2019 - Spring 2024)
  - CLAS Big Data Task Force Committee Member (Spring 2019)
  - Faculty Search Committee Member (Fall 2018 - Spring 2019)
  - Furniture Committee Member (Fall 2018 - Spring 2019)
- **Development of UConn Astrophysics Program:**
  - Facilitator of Professional Development Seminars / Discussions at least once per semester in UConn Astronomy (Fall 2017 - present)
  - Lead Development of Interactive New Physics Course for Non-Majors (PHYS1040QE), Interactive New Advanced Astrophysics Course PHYS 4720/6720 (2021), New Astrophysics Course for Majors PHYS 2701 (2017)
  - Addition and co-development of 6 new Astrophysics Courses: PHYS 2701, 2702, 4710, 4720, 4740, and 1040QE along with Profs. Whitaker and Trump (2016-2021)
  - Helped to overhaul and update PHYS1025Q (2019)
  - Co-Development of Astrophysics Minor, along with Profs. Whitaker and Trump (2017)

Service to Scientific Community:

- **International Proposal Reviews**
  - Swiss National Science Foundation Proposal Review (2024)

- Deutsche Forschungsgemeinschaft (DFG) German Research Foundation Proposal Review (2024)
- **NSF Program Reviews**
  - Green Bank Observatory (GBO) NSF Program Review (2021)
  - National Radio Astronomy Observatory (NRAO) NSF Program Review (2018)
- **Proposal Review Panels:**
  - NASA James Webb Space Telescope Time Allocation External Reviewer (2023)
  - NASA Astrophysics Data Analysis Program, Chair (2020)
  - Large Millimeter Telescope Proposal Review Committee (2020)
  - Atacama Large Millimeter Array Time Allocation Committee (2019)
  - NASA Hubble Postdoctoral Fellowship Program (2018)
  - Smithsonian Astrophysics Observatory Submillimeter Array (2015-2017)
  - NASA Astrophysics Data Analysis Program (2015)
- **External PhD Thesis Defense Committee Member:**
  - Boston University, Taylor Hogge, (Dec. 2018 - Oct. 2021)
  - University of Victoria, Jared Keown (Sept. 2019)
- **Referee**: Astrophysical Journal *(ApJ)*, Astronomy & Astrophysics *(A&A)*, Nature Astronomy
- **Co-I for the *PRIMA Far-IR Probe Mission Concept*** (February 2022 - present)
- **NASA-appointed member of the *Science & Technology Definition Team (STDT)*:** Origins Space Telescope (OST) (March 2016 - January 2020)
- **NASA OST Group Leader** for:
  - The Milky Way, ISM, and Local Galaxy Science Group (2016 - 2020)
  - The OST Advocacy Group (2017 - 2020)
- **Science Organizing Committees:**
  - Early Phases of Star Formation (EPoS), Ringberg Castle, Germany Spring 2024
  - European Astronomical Society Symposium *The golden decade of infrared astrophysics*, Valencia, Spain, Summer 2022
  - New England Star Formation Workshop, UConn (01/17/20)
  - Galactic Center Workshop, *New Horizons in the Galactic Center Astronomy and Beyond*, Keio University, Japan 2019
  - Olympian Symposium *Gas and Stars from milli- to mega-parsecs*, Greece in 2018
  - Chair of the Science and Local Organizing Committees for the Harvard-Heidelberg Workshop on Star Formation in 2015
- **Local Organizing Committees:**
  - Conference for Undergraduate Women in Physics (CUWiP) at UConn January 2025

Selected Outreach Activities

Founder and Leader of UConn STARs (Science Technology & Astronomy Recruits, Spring 2022 - present):

- Program to recruit and retain students from historically excluded groups in the physics major. Launched in Spring 2022, supported by a CLAS DEI grant. Program is supported by Battersby's NSF CAREER grant for five years starting in Fall 2022 with additional funding from CLAS.
- Professional development, social activities, and community engagement as well as dedicated one-on-one mentorship for each participant.
- AY2324 highlights: 19 participants with 6 returning as co-leads and 4 additional graduate student co-leads. We met weekly over the course of the academic year for professional development, community-building, and social activities. We taught eight classroom lesson plans at Hartford High School over 4 days May 6th-9th, 2024 and lead a solar telescope observing session for all

students. We reached about 100 high school students.

- AY2223 highlights: 16 participants, with 4 returning as co-leads and 2 additional graduate student co-leads. We visited Hartford High School May 8th and 11th and taught four classroom lesson plans, hosted daily solar telescope viewing, and met with an afterschool group. We reached about 100 high school students.
- Spring 2022 highlights: 7 participants with 3 returning as co-leads. We hosted 15 SAND elementary school students at UConn, including bus transport, a power plant tour, and a visit to the Dairy Bar (04/29/22). We developed 4 lesson plans and led four class sessions over two days at the SAND Elementary School in Hartford (5/9/22 and 5/13/22) reaching about 100 elementary school students.

Co-Founder of the UConn Graduate BRIDGE+ program (Spring 2021):

- Co-founded in 2021, led by the Vergano Institute for Inclusion in the School of Engineering and funded through the President's Commitment to Community Initiative.
- A summer bridge program for incoming UConn STEM graduate students from traditionally underrepresented backgrounds.
- Taught two course sessions in Summer 2021, one entitled "Big Data and Computation" and the other "The Holistic STEMinist: Work-Life Balance." (08/19/21 and 08/24/21)

Co-Founder and Leader of BiteScis (2014 - 2020):

- A program that brings together science graduate students with K-12 teachers to develop lesson plans to bring modern science research into the K-12 classroom.
- BiteScis has produced more than 25 new "classroom-tested, scientist-approved" lesson plans, freely available on our website bitescis.org.
- Granted $215k from the Templeton Foundation

Co-Founder and Leader of CU-STARs (2010-2013): Founded a new program at CU-Boulder to retain undergraduate students from traditionally underrepresented backgrounds in STEM during their first year. Estimated to have impacted 50 undergraduate and hundreds of high school students.

Additional Highlighted Outreach Activities:

- Led Astronomy Activity at Hartford Schools Physics Open House. (April 2018)
- Co-organized solar eclipse viewing party. (August 2017)
- Science Advisor for the Play "The Women who Mapped the Stars" by Joyce Van Dyke, premiering at the Central Square Theater. (07/01/2016 - 09/01/2017)
- ComSciCon workshop organizer (2015-2017)
- WorldWide Telescope Ambassador (2014-2016)
- Leader of the Colorado Women in Astronomy Group (2010-2012)

Prof. Cara Battersby

Publications

Summary: Cara Battersby has an h-index of 44, is an author on 100 publications with a total citation count of 6,125 (computed February 2025 from the NASA Astrophysics Data Service Page). Complete publication list is below.

First and Second Author or Advised Student Lead

[1] Alboslani, D., **Battersby, Cara**, Brunker, S., Clavel, M., Walker, D., & Lipman, D., *3D MC II: X ray echoes reveal a clumpy molecular cloud in the CMZ*, January. 2025, accepted to AJ, arXiv:2501.07669 [ADS]

[2] Brunker, S. W., **Battersby, Cara**, Alboslani, D., Clavel, M., Walker, D. L., Lipman, D., Hatchfield, H. P., & Terrier, R., *3D MC I: X-ray Tomography Begins to Unravel the 3-D Structure of a Molecular Cloud in our Galaxy's Center*, January. 2025, accepted to ApJL, arXiv:2501.07717 [ADS]

[3] Lipman, D., **Battersby, Cara**, Walker, D. L., Sormani, M. C., Bally, J., Barnes, A., Ginsburg, A., Glover, S. C. O., Henshaw, J. D., Hatchfield, H. P., Immer, K., Klessen, R. S., Longmore, S. N., Mills, E. A. C., Smith, R., Tress, R. G., Alboslani, D., & Zhang, Q., *3-D CMZ IV: Distinguishing Near vs. Far Distances in the Galactic Center Using Spitzer and Herschel*, October. 2024, accepted to ApJ, arXiv:2410.17321 [ADS]

[4] **Battersby, Cara**, Walker, D. L., Barnes, A., Ginsburg, A., Lipman, D., Alboslani, D., Hatchfield, H. P., Bally, J., Glover, S. C. O., Henshaw, J. D., Immer, K., Klessen, R. S., Longmore, S. N., Mills, E. A. C., Molinari, S., Smith, R., Sormani, M. C., Tress, R. G., & Zhang, Q., *3-D CMZ I: Central Molecular Zone Overview*, October. 2024, accepted to ApJ, arXiv:2410.17334 [ADS]

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[8] Hatchfield, H. P., **Battersby, Cara**, Barnes, A. T., Butterfield, N., Ginsburg, A., Henshaw, J. D., Longmore, S. N., Lu, X., Svoboda, B., Walker, D., Callanan, D., Mills, E. A. C., Ho, L. C., Kauffmann, J., Kruijssen, J. M. D., Ott, J., Pillai, T., & Zhang, Q., *CMZoom. IV. Incipient High-mass Star Formation throughout the Central Molecular Zone*, February. 2024, ApJ, 962, 14 [ADS]

[9] Callanan, D., Longmore, S. N., **Battersby, Cara**and Hatchfield, H. P., Walker, D. L., Henshaw, J., Keto, E., Barnes, A., Ginsburg, A., Kauffmann, J., Kruijssen, J. M. D., Lu, X., Mills, E. A. C., Pillai, T., Zhang, Q., Bally, J., Butterfield, N., Contreras, Y. A., Ho, L. C., Immer, K., Johnston, K. G., Ott, J., Patel, N., & Tolls, V., *CMZoom III: Spectral line data release*, April. 2023, MNRAS, 520, 4760 [ADS]

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[15] **Battersby, Cara**, Armus, L., Bergin, E., Kataria, T., Meixner, M., Pope, A., Stevenson, K. B., Cooray, A., Leisawitz, D., Scott, D., Bauer, J., Bradford, C. M., Ennico, K., Fortney, J. J., Kaltenegger, L., Melnick, G. J., Milam, S. N., Narayanan, D., Padgett, D., Pontoppidan, K., Roellig, T., Sandstrom, K., Su, K. Y. L., Vieira, J., Wright, E., Zmuidzinas, J., Staguhn, J., Sheth, K., Benford, D., Mamajek, E. E., Neff, S. G., Carey, S., Burgarella, D., De Beck, E., Gerin, M., Helmich, F. P., Moseley, S. H., Sakon, I., & Wiedner, M. C., *The Origins Space Telescope*, August. 2018, Nature Astronomy, 2, 596 [ADS]

[16] **Battersby, C.**, Bally, J., & Svoboda, B., *The Lifetimes of Phases in High-mass Star-forming Regions*, February. 2017, ApJ, 835, 263 [ADS]

[17] Mills, E. A. C. & **Battersby, C.**, *Origins of Scatter in the Relationship between HCN 1-0 and Dense Gas Mass in the Galactic Center*, January. 2017, ApJ, 835, 76 [ADS]

[18] Svoboda, B. E., Shirley, Y. L., **Battersby, C.**, Rosolowsky, E. W., Ginsburg, A. G., Ellsworth-Bowers, T. P., Pestalozzi, M. R., Dunham, M. K., Evans, II, N. J., Bally, J., & Glenn, J., *The Bolocam Galactic Plane Survey. XIV. Physical Properties of Massive Starless and Star-forming Clumps*, May. 2016, ApJ, 822, 59 [ADS]

[19] Zucker, C. & **Battersby, C.** and Goodman, A., *The Skeleton of the Milky Way*, December. 2015, ApJ, 815, 23 [ADS]

[20] **Battersby, C.**, Ginsburg, A., Bally, J., Longmore, S., Dunham, M., & Darling, J., *The Onset of Massive Star Formation: The Evolution of Temperature and Density Structure in an Infrared Dark Cloud*, June. 2014, ApJ, 787, 113 [ADS]

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[23] **Battersby, C.**, Bally, J., Ginsburg, A., Bernard, J.-P., Brunt, C., Fuller, G. A., Martin, P., Molinari, S., Mottram, J., Peretto, N., Testi, L., & Thompson, M. A., *Characterizing precursors to stellar clusters with Herschel*, November. 2011, A&A, 535, A128 [ADS]

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Other Collaborative Publications

[1] Yang, K., Lu, X., Zhang, Y., Liu, X., Ginsburg, A., Liu, H. B., Cheng, Y., Feng, S., Liu, T., Zhang, Q., Mills, E. A. C., Walker, D. L., Inutsuka, S.-i., **Battersby, Cara**, Longmore, S. N., Tang, X., Kauffmann, J., Gu, Q., Li, S., Luo, Q., Kruijssen, J. M. D., Pillai, T., Qiao, H.-H., Qiu, K., & Shen, Z., *ALMA observations of massive clouds in the central molecular zone: slim filaments tracing parsec-scale shocks*, February. 2025, A&A, 694, A86 [ADS]

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[3] Nonhebel, M., Barnes, A. T., Immer, K., Armijos-Abendaño, J., Bally, J., **Battersby, C.**, Burton, M. G., Butterfield, N., Colzi, L., García, P., Ginsburg, A., Henshaw, J. D., Hu, Y., Jiménez-Serra, I., Klessen, R. S., Kruijssen, J. M. D., Liang, F. H., Longmore, S. N., Lu, X., Martín, S., Mills, E. A. C., Nogueras-Lara, F., Petkova, M. A., Pineda, J. E., Rivilla, V. M., Sánchez-Monge, Á., Santa-Maria, M. G., Smith, H. A., Sofue, Y., Sormani, M. C., Tolls, V., Walker, D. L., Wallace, J., Wang, Q. D., Williams, G. M., & Xu, F. W., *Disruption of a massive molecular cloud by a supernova in the Galactic Centre: Initial results from the ACES project*, November. 2024, A&A, 691, A70 [ADS]

[4] Tress, R. G., Sormani, M. C., Girichidis, P., Glover, S. C. O., Klessen, R. S., Smith, R. J., Sobacchi, E., Armillotta, L., Barnes, A. T., **Battersby, C.**, Bogue, K. R. J., Brucy, N., Colzi, L., Federrath, C., García, P., Ginsburg, A., Göller, J., Hatchfield, H. P., Henkel, C., Hennebelle, P., Henshaw, J. D., Hirschmann, M., Hu, Y., Kauffmann, J., Kruijssen, J. M. D., Lazarian, A., Lipman, D., Longmore, S. N., Morris, M. R., Nogueras-Lara, F., Petkova, M. A., Pillai, T. G. S., Rivilla, V. M., Sánchez-Monge, Á., Soler, J. D., Whitworth, D., & Zhang, Q., *Magnetic field morphology and evolution in the Central Molecular Zone and its effect on gas dynamics*, November. 2024, A&A, 691, A303 [ADS]

[5] Cotera, A. S., Hankins, M. J., Sofia Galactic Center Legacy Project, Bally, J., Barnes, A. T., **Battersby, Cara D.**, Hatchfield, H. P., Herter, T. L., Lau, R. M., Longmore, S. N., Mills, E. A. C., Morris, M. R., Radomski, J. T., Simpson, J. P., Stephens, Z., & Walker, D. L., *SOFIA/FORCAST Galactic Center Source Catalog*, October. 2024, ApJ, 973, 110 [ADS]

[6] Wells, M. R. A., Beuther, H., Molinari, S., Schilke, P., **Battersby, C.**, Ho, P., Sánchez-Monge, Á., Jones, B., Scheuck, M. B., Syed, J., Gieser, C., Kuiper, R., Elia, D., Coletta, A., Traficante, A., Wallace, J., Rigby, A. J., Klessen, R. S., Zhang, Q., Walch, S., Beltrán, M. T., Tang, Y., Fuller, G. A., Lis, D. C., Möller, T., van der Tak, F., Klaassen, P. D., Clarke, S. D., Moscadelli, L., Mininni, C., Zinnecker, H., Maruccia, Y., Pezzuto, S., Benedettini, M., Soler, J. D., Brogan, C. L., Avison, A., Sanhueza, P., Schisano, E., Liu, T., Fontani, F., Rygl, K. L. J., Wyrowski, F., Bally, J., Walker, D. L., Ahmadi, A., Koch, P., Merello, M., Law, C. Y., & Testi, L., *Dynamical accretion flows: ALMAGAL: Flows along filamentary structures in high-mass star-forming clusters*, October. 2024, A&A, 690, A185 [ADS]

[7] Ginsburg, A., Bally, J., Barnes, A. T., **Battersby, Cara**, Budaiev, N., Butterfield, N. O., Caselli, P., Colzi, L., Dutkowska, K. M., García, P., Gramze, S., Henshaw, J. D., Hu, Y., Jeff, D., Jiménez-Serra, I., Kauffmann, J., Klessen, R. S., Levesque, E. M., Longmore, S. N., Lu, X., Mills, E. A. C., Morris, M. R., Nogueras-Lara, F., Oka, T., Pineda, J. E., Pillai, T. G. S., Rivilla, V. M., Sánchez-Monge, Á., Santa-Maria, M. G., Smith, H. A., Sofue, Y., Sormani, M. C., Tremblay, G. R., Vermariën, G., Vikhlinin, A., Viti, S., Walker, D., Wang, Q. D., Xu, F., & Zhang, Q., *A broad linewidth, compact, millimeter-bright molecular emission line source near the Galactic Center*, April. 2024, arXiv e-prints, arXiv:2404.07808 [ADS]

[8] Jeff, D., Ginsburg, A., Bulatek, A., Budaiev, N., Sanchez-Monge, A., Bonfand, M., **Battersby, C.**, Meng, F., Schilke, P., & Schmiedeke, A., *Thermal Properties of the Hot Core Population in Sagittarius B2 Deep South.*, March. 2024, ApJ, 962, 48 [ADS]

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[11] Aalto, S., **Battersby, Cara**, Chin, G., Hunt, L. K., Rigopoulou, D., Stark, A. A., Viti, S., & Walker, C. K., *Extragalactic Science with the Orbiting Astronomical Satellite Investigating Stellar Systems (OASIS) Observatory*, February. 2023, SSR, 219, 9 [ADS]

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[17] Henshaw, J. D., Krumholz, M. R., Butterfield, N. O., Mackey, J., Ginsburg, A., Haworth, T. J., Nogueras-Lara, F., Barnes, A. T., Longmore, S. N., Bally, J., Kruijssen, J. M. D., Mills, E. A. C., Beuther, H., Walker, D. L., **Battersby, Cara**, Bulatek, A., Henning, T., Ott, J., & Soler, J. D., *A wind-blown bubble in the Central Molecular Zone cloud G0.253+0.016*, February. 2022, MNRAS, 509, 4758 [ADS]

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