

CLARA E. BRASSEUR

cebrasseur@gmail.com ◇ (+1) 814-222-2398
ceb8.github.io ◇ github.com/ceb8 ◇ 0000-0002-9314-970X

EDUCATION

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| University of St Andrews; St Andrews, UK
PhD, Astronomy
Supervisor: Prof. Moira Jardine | <i>2025</i> |
| Liverpool John Moores University; Liverpool, UK
MSc with distinction, Astrophysics | <i>2019</i> |
| Mills College; Oakland, California
MA, Music Composition | <i>2010</i> |
| Oberlin College; Oberlin, Ohio
BA, Astrophysics and Music Composition. Mathematics minor | <i>2008</i> |

SELECTED EXPERIENCE

NSF AAPF Postdoctoral Scholar Lowell Observatory, Flagstaff, AZ	<i>October 2025 - present</i>
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- Carrying out a research program entitled "Stellar and substellar magnetospheric physics"
- Carrying out a broader impacts program focussed on sonification of astronomical data as an outreach tool

Postgraduate Researcher University of St Andrews, St. Andrews, UK	<i>September 2021 – September 2025</i>
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- Multiwavelength study of AB Doradus; combining radio interferometry with coronal magnetic field model based on surface magnetic field maps to explore the magnetic structure of the star, leading to Brasseur et al. 2024.
- Studied the observability of Electron Cyclotron Maser (ECM) emission as the result of ejected slingshot prominences across a sample of M dwarfs (paper forthcoming).
- Developed software magnetic corona model that allows the creation of synthetic images and dynamic spectra (paper forthcoming).

Software Engineer Space Telescope Science Institute (STScI), Baltimore, MD	<i>May 2016 – August 2021</i>
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- Software developer at the Mikulski Archive for Space Telescopes (MAST).
- Created scalable all-sky imagery from Panoramic Survey Telescope and Rapid Response System (PanSTARRS) data.
- Documented, improved, and extended the MAST Application Programming Interface (API).
 - * Developed MAST module for Astroquery Python package
 - * Led trainings on usage of RESTful and Python APIs
 - * Developed new API functionality for image cutouts
- Developed Astrocut python package for astronomical image cutouts, providing streamlined data access to astronomers and relieving pressure on archive infrastructure.

- On development team for TESScut and zCut cutout services, which allow astronomers to download astronomical cutouts from the TESS mission and Hubble deep field surveys respectively, both based on Astrocut.
- Developed Astronify python package for sonifying time series data, helping to increase access to astronomical data for blind and visually impaired astronomers.
- Developed interactive plots for the MAST web interfaces exo.MAST and z.MAST.
- Provided user support including responding to helpdesk questions.
- Performed sustaining engineering for general software maintenance and reduction of technical debt.
- Supported and mentored undergraduate interns.

Research Assistant for Dr. Rachel Osten

September 2015 – August 2021

Space Telescope Science Institute (STScI), Baltimore, MD

- Multiwavelength (visible/ultra-violet) exploration of stellar flares using the overlapping surveys from the Galaxy Evolution Explorer (GALEX), and Kepler space telescopes.
- Detected and analyzed a collection of short-duration ultra-violet flares in GALEX data, leading to Brasseur et al, 2019.
- Explored Kepler flares in corresponding Kepler data to better understand flare energy fractionation and frequency distributions, leading to Brasseur et al, 2022.

Cryptanalyst

July 2011 – April 2016

National Security Agency (NSA), Fort Meade, MD

- Devised statistical and analytic tests for data diagnosis; developed software to apply tests and processing based on results.
- Modified high interest information gathering algorithm, by using theoretical mathematics to explore trade-offs in effort, efficiency, and accuracy.
- Designed algorithm in C/C++ for implementation of secure information sharing protocol and worked jointly to implement it in a cross-platform application. Achieved five-fold improvement in application speed through parallelization of code. Demonstrated program prototype to management and potential customers.
- Brought legacy production Perl scripts up to agency coding standards, adding robust error handling, increased flexibility in supported file types, and detailed succinct logs

HONORS AND AWARDS

Lancelot M. Berkeley Prize (as part of Astropy Collaboration)

2025

Awarded to the Astropy Collaboration “for their work developing and maintaining this code base, which provides underlying support for much of astronomy research as it is conducted today.”

Co-I on NASA Foundation Award

2024

“Investing in the Astropy Project to Enable Research and Education in Astronomy”

\$1.8M, PI Dr. Erik Tollerud

Cool Stars 22 Conference Grant

2024

Awarded in support of conference participation.

St Leonards College Travel Fund Award

2023

£160 awarded in support of conference travel.

Co-I on Hubble Treasury Program	<i>2023</i>
“From High-Energy Particle Beam Heating in Stars to Ozone Destruction in Planets: NUV Spectra as the Fulcrum for a Comprehensive Understanding of Flaring M Dwarf Systems”	
8 visits of 7 orbits each, PI Dr. Adam Kowalski	
Arthur Maitland Prize	<i>2023</i>
Awarded to the best student talk in Physics and Astronomy.	
Astropy Moore Foundation/NASA ROSES Grants	<i>2021,2022,2024</i>
\$25,700, “Astroquery Maintenance”	
\$6,600, “Develop Astropy Learn Materials”	
\$6,000, “Astropy Leadership and Coordination Committee”	
AURA Technology and Innovation Outstanding Achievement Award	<i>2020</i>
Award presented annually to a single individual or team among all AURA centers for significant innovative contribution and demonstrated excellence in an area of technology. Sole recipient of the 2020 award in recognition of development work for Astrocut and associated cutout services.	
Co-I in STScI Director’s Discretionary Research Fund Grant	<i>2019</i>
“Sonifying MAST: Engagement and Accessibility for The BVI Community”	
\$60,000, PI Dr. Scott Fleming	
Research Support from NASA Astrophysics Data Analysis Program Grant	<i>2019</i>
“Mining Multiwavelength Flares with Kepler and GALEX”	
\$141,400, PI Dr. Rachel Osten	
STScI Team Award	<i>2019</i>
Awarded in recognition of the TESS data archive release success.	
Co-I in STScI Director’s Discretionary Research Fund Grant	<i>2018</i>
“Mining Multi-wavelength Flares with Kepler and GALEX”	
\$32,000, PI Dr. Rachel Osten	
Music Alumni Scholarship	<i>2008-2009</i>
Awarded in support of graduate studies in music composition at Mills College.	
Vance Mathematics scholarship	<i>2004-2008</i>
Application-based scholarship awarded in support of mathematics study at Oberlin College.	
John F Oberlin scholarship	<i>2004-2008</i>
Merit-based scholarship awarded in support of undergraduate studies at Oberlin College.	

SELECTED PUBLICATIONS

Brasseur, C. E., M. M. Jardine, G.A. J. Hussain. “Constraining the coronal properties of AB Dor in the radio regime” *Monthly Notices of the Royal Astronomical Society*, 530.2, (2024): 2442.

Brasseur, C. E., Rachel A. Osten, Isaiah I. Tristan, and Adam F. Kowalski. “Constraints on Stellar Flare Energy Ratios in the NUV and Optical from a Multiwavelength Study of GALEX and Kepler Flare Stars” *The Astrophysical Journal* 994.1 (2023): 5.

Astropy Collaboration, Adrian M. Price-Whelan, Pey Lian Lim, Nicholas Earl, Nathaniel Starkman, Larry Bradley, David L. Shupe, Aarya A. Patil, Lia Corrales, **C. E. Brasseur**, et al. “The Astropy Project: Sustaining and Growing a Community-oriented Open-source Project and the Latest Major Release (v5.0) of the Core Package” *The Astrophysical Journal* 935.2 (2022): 167.

Fleming, Scott W., Chase Million, Rachel A. Osten, Dmitrii Y. Kolotkov, and **C. E. Brasseur**. “New Time-Resolved, Multi-Band Flares In The GJ 65 System With gPhoton” The Astrophysical Journal (2022): 8.

Brasseur, C. E., Rachel A. Osten, and Scott W. Fleming. “Short-duration Stellar Flares in GALEX Data.” The Astrophysical Journal 883.1 (2019): 88.

Ginsburg, Adam, B. M. Sipőcz, **C. E. Brasseur**, et al. “astroquery: An Astronomical Web-querying Package in Python.” The Astronomical Journal 157.3 (2019): 98.

TALKS (* INDICATES INVITED, _ INDICATES INTERNATIONAL)

Radio Signatures of Magnetic Stellar Coronae

October 2025, Flagstaff Astronomy Symposium 2025, Lowell Observatory, AZ

*** Exploring the Magnetic Corona of a Young Sun**

February 2025, University of Glasgow Astronomy and Astrophysics Seminar, Glasgow, UK

*** AAS Plenary for Lancelot M Berkeley Prize on behalf of Astropy Collaboration**

January 2025, National Harbour, USA

The extended corona of a young Sun: combined VLBI/spectropolarimetry observations

June 2024 Cool Stars 22, San Diego, USA, available online

July 2024 National Astronomy Meeting, Hull, UK

*** Stellar Flare Energy Ratios: NUV vs Optical**

Centro de Rádio Astronomia e Astrofísica Mackenzie Colloquium

The Radio Corona of AB Dor

December 2023 SUPA Cormack Meeting, Glasgow, UK

December 2023 Solar/stellar St. Andrews/MPS workshop, St Andrews, UK

May 2023 PhD Annual Assessment Conference, St Andrews, UK

April 2023 Bcool Meeting, Göttingen, Germany

*** Hearing the Light: Astronomical Data Sonification**

January 2023 Edinburgh Astronomy Society, available online

March 2023 Clydesdale Astronomy Society

February 2024, St Leanoard’s College Lecture Series

May 2024, British Astronomical Society One Day Spring Meeting 2024

*** Software Development in Astronomy**

February 2023 St Andrews Interdisciplinary Science Conference, St Andrews, UK

Stellar magnetic field manifestations: prominences and flares

July 2022 Cool Stars 21, Toulouse, France

*** Making Astronomy More Accessible for Blind and Visually Impaired Audiences**

February 2022 NASA Universe of Learning Science Briefing

Sonifying Your Presentation for Accessibility

November 2021 SciAccess Conference

Hearing The Light: How Sonification Deepens our Understanding of the Cosmos and Makes Astronomy More Accessible

November 2020 Space Telescope Science Institute Public Lecture Series, available online

Astronify: listening to the stars

November 2020 Astronomical Data Analysis Software and Systems conference, available online

*** Stellar Flares in GALEX and Kepler**

July 2020 Centre for Fusion, Space and Astrophysics Seminar, Warwick University, Warwick, UK

*** Work smart not hard: How Astrocut/TESScut efficiently cuts TESS full-frame image sets**

April 2020 Open Planetary Lunch Talks, available online

*** Short Duration Flares in GALAX Data**

December 2019 Solar Focus Meeting, University of Colorado, Boulder, CO

*** Accessing TESS Data Programmatically: A MAST case study**

July 2019 TESS/Kepler Asteroseismology Consortium workshop, MIT, Cambridge, MA

*** TESScut and ExoMAST: Working with TESS Time Series Data**

February 2019 TESS Data Workshop, Space Telescope Science Institute, Baltimore, MD

Astrocut: A cutout service for TESS full-frame image sets

November 2018 Astronomical Data Analysis Software and Systems conference, College Park, MD

Short Duration Flares in GALAX Data

July 2018 COSPAR conference, Pasadena, CA

The MAST API: Accessing Space Telescope Data Programmatically

October 2017 Astronomical Data Analysis Software and Systems conference, Santiago, Chile

POSTER PRESENTATIONS

The Radio Corona of AB Dor

Brasseur, Clara E. and Jardine Moira M. SUPA Annual Gathering 2024, Glasgow, UK and May 2024 PhD Annual Assessment Conference, St Andrews, UK

zCut: extending Astrocut for deep fields

Brasseur, C. & MAST Team. AAS 235, Honolulu, HI [109.21](2020)

MAST APIs: Present to Future

Brasseur, C and Donadson, T. Astronomical Data Analysis Software and Systems conference, Groningen, Netherlands (2019)

AstroCut: A cutout service for TESS full-frame image sets

Brasseur, Clara; White, Rick; Fleming, Scott W.; Mullally, Susan E.; Phillip, Carlita; Hargis, Jonathan; Fox, Mike; Smith, Arfon M. AAS 233 [245.10] (2019)

Short Duration Flares in GALAX Data

Brasseur, Clara; Osten, Rachel A. AAS 232 [317.01] (2018)

COMMUNITY ENGAGEMENT

Astropy Learn Coordinator, August 2024-present. Oversee the Astropy “Learn” ecosystem.

Astropy Coordination Committee member, 2023-present. Overall coordination and management of the Astropy project.

Maintainer, Astroquery, 2019-present. Develop and manage community contributions to Astroquery package for querying astronomical web forms and databases.

Journal Article Referee, Monthly Notices of the Royal Astronomical Society; Journal of Open Source Software.

Science Organizing Committee, Astro Hack Week, 2022. Week-long workshop that combines summer school and unconference.

Science Organizing Committee, Python in Astronomy, 2020. Week-long workshop on Python in Astronomy, reduced to 24 hour virtual hackatho due to COVID-19.

Member, Royal Astronomical Society, 2023-present.

Member, American Astronomical Society, 2016-2021, 2025-present.

TECHNICAL SKILLS

Programming Languages and Frameworks

Python, C, C++, C#, Fortran, JavaScript, ExtJS, Perl, Tornado, HTML/CSS, MS SQL, Git, GitHub, Jupyter, LaTeX, Overleaf, DS9, Aladdin, Mathematica, VMware/vSphere, Linux, Bash, Condor, WinDbg, GNU Debugger, Valgrind, Visual Studio, Certified Scrum Master

Observing experience

Apache Point Observatory 3.5-meter telescope, 3 nights, ARC Telescope Imaging Camera, Dual Imaging Spectrograph.

TEACHING EXPERIENCE

Computational Astrophysics Demonstrator

January-April 2022, 2023

University of St Andrews, St Andrews, UK

Provided guidance for students in this third year course on both astronomy topics and Fortran programming.

Using Python to Search NASA's Astrophysics Archives

January, June 2018-2021

American Astronomical Society Meetings

Collaborated with a team of astronomers and software engineers from multiple NASA archives to present a hands-on tutorial/workshop that introduces participants to command-line data access tools specifically using virtual observatory protocols in Python.

TESS Data Workshop

February 2019

Space Telescope Science Institute, MD

Prepared and taught an hour and a half introduction to the use of the TESScut software.

Introduction to MAST APIs

June 2017

Space Telescope Science Institute, MD

Prepared and taught workshops on the usage of the MAST RESTful and Astroquery APIs.

Graduate Teaching Assistant

August 2009 – May 2010

Mills College, Oakland, CA

Prepared and taught two semesters of undergraduate Basic Musicianship II. Initiated restructuring of the Mills musicianship curriculum.