

# Brendan M. O'Connor

PHD STUDENT · THE GEORGE WASHINGTON UNIVERSITY

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## Education

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### The George Washington University

PHD PHYSICS – GPA: 4.0

- Advisor: Dr. Chryssa Kouveliotou; Co-Advisors: Eleonora Troja and Brad Cenko
- Thesis: The Transient Universe: Compact Objects Near and Far
- Graduation planned for Spring 2023

Washington, DC

August 2017 - present

### The George Washington University

MPHIL PHYSICS – GPA: 4.0

Washington, DC

August 2017 - July 2020

### The George Washington University

MS PHYSICS – GPA: 4.0

Washington, DC

August 2017 - February 2020

### Union College

BS PHYSICS – GPA: 3.8 (*summa cum laude*)

- Minor in Astrophysics
- Thesis: Colliding Wind Binaries with Orbital Motion: Line Wind Formulation
- Thesis advisor: Francis Wilkin

Schenectady, NY

August 2013 - June 2017

## Professional Experience

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2019 - now

**Faculty Assistant**, Department of Astronomy, University of Maryland, College Park

Advisor: Eleonora Troja

2019 - now

**Contractor**, NASA Goddard Space Flight Center (GSFC) Astrophysics Science Division (ASD)

Advisors: Eleonora Troja and Brad Cenko

2018 - now

**Graduate Research Assistant**, Department of Physics, The George Washington University

Advisor: Chryssa Kouveliotou

2016 - 2017

**Undergraduate Thesis Researcher**, Department of Physics and Astronomy, Union College

Advisor: Francis Wilkin

2014

**Undergraduate Summer Researcher**, Department of Astronomy, University of Massachusetts Amherst

Advisor: Mark Heyer

## Publications

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### FIRST AUTHOR

**O'Connor, B.**, Troja, E., Dichiara, S., Beniamini, P., et al. 2022. *A deep survey of short GRB host galaxies over  $z \sim 0 - 2$ : implications for offsets, redshifts, and environments.* MNRAS, In press.

**O'Connor, B.**, Göğüş, E., Huppenkothen, D., Kouveliotou, C., et al. 2021. *Identification of an X-Ray Pulsar in the BeXRB System IGR J18219–1347.* ApJ, 927, 139

**O'Connor, B.**, Troja, E., Dichiara, S., Chase, E. A., et al. 2021. *A tale of two mergers: constraints on kilonova detection in two short GRBs at  $z \sim 0.5$ .* MNRAS, 502, 1279

**O'Connor, B.**, Beniamini, P., & Kouveliotou, C. 2020. *Constraints on the circumburst environments of short gamma-ray bursts.* MNRAS, 495, 4782

### CO-AUTHOR

- Becerra, R. L., Troja, E., Watson, A., **O'Connor, B.**, et al., 2022. *Deciphering the unusual stellar progenitor of GRB 210704A*. In preparation.
- Troja, E., Fryer, C. L., **O'Connor, B.**, Ryan, G., et al., 2022. *A long gamma-ray burst from a stellar merger in the nearby Universe*. Submitted.
- Dichiara S., Troja E., Lipunov V., Ricci R., et al., 2022. *The early afterglow of GRB 190829A*. MNRAS, 512, 2337.
- Chase, E. A., **O'Connor, B.**, Fryer, C. L., Troja, E., et al., 2022. *Kilonova Detectability with Wide-field Instruments*. ApJ, 927, 163.
- Troja, E., **O'Connor, B.**, Ryan, G., Piro, L., et al., 2022. *Accurate flux calibration of GW170817: is the X-ray counterpart on the rise?*. MNRAS, 510, 1902.
- Dichiara, S., Becerra, R. L., Chase, E. A., Troja, E., et al., 2021. *Constraints on the Electromagnetic Counterpart of the Neutron-star-Black-hole Merger GW200115*. ApJL, 923, L32.
- Gorgone, N. M., Woudt, P. A., Buckley, D., Mukai, K., et al., 2021. *Swift/XRT Deep Galactic Plane Survey Discovery of a New Intermediate Polar Cataclysmic Variable, Swift J183920.1—045350*. ApJ, 923, 243.
- Piro, L., Bruni, G., Troja, E., **O'Connor, B.**, et al., 2021. *The fast radio burst FRB 20201124A in a star-forming region: Constraints to the progenitor and multiwavelength counterparts*. A&A, 656, L15.
- Enoto, T., Ng, M., Hu, C.-P., Güver, T., Jaisawal G. K., **O'Connor, B.**, et al., 2021. *A Month of Monitoring the New Magnetar Swift J1555.2—5402 during an X-Ray Outburst*. ApJL, 920, L4.
- Bruni, G., **O'Connor, B.**, Matsumoto, T., Troja, E., et al., 2021. *Late-time radio observations of the short GRB 200522A: constraints on the magnetar model*. MNRAS, 505, L41.
- Dichiara, S., Troja, E., Beniamini, P., **O'Connor, B.**, et al., 2021. *Evidence of Extended Emission in GRB 181123B and Other High-redshift Short GRBs*. ApJL, 911, L28.
- Ricci, R., Troja, E., Bruni, G., Matsumoto, T., Piro, L., **O'Connor, B.**, et al., 2021. *Searching for the radio remnants of short-duration gamma-ray bursts*. MNRAS, 500, 1708.
- Champion, D., Cognard, I., Cruces, M., Desvignes, G., et al., 2020. *High-cadence observations and variable spin behaviour of magnetar Swift J1818.0-1607 after its outburst*. MNRAS, 498, 6044.
- Troja, E., van Eerten, H., Zhang, B., Ryan, G., Piro, L., Ricci, R., **O'Connor, B.**, et al., 2020. *A thousand days after the merger: Continued X-ray emission from GW170817*. MNRAS, 498, 5643.
- Dichiara, S., Troja, E., **O'Connor, B.**, Marshall, F. E., et al., 2020. *Short gamma-ray bursts within 200 Mpc*. MNRAS, 492, 5011.

#### FIRST AUTHOR (NON-REFEREED):

- O'Connor, B.**, Troja, E., Dichiara, S., Cenko., S. B., 2022. *GRB 220611A: Continued Gemini Infrared Observations*. GCN, 32228.
- O'Connor, B.**, Troja, E., Dichiara, S., Cenko., S. B., 2022. *GRB220611A: Gemini Optical Afterglow Confirmation*. GCN, 32217.
- O'Connor, B.**, Troja, E., Dichiara, S., 2022. *GRB 220611A: Gemini South Infrared Detection*. GCN, 32203.
- O'Connor, B.**, Troja, E., Dichiara, S., 2022. *GRB 220606B: Gemini South Optical Observations*. GCN, 32177.
- O'Connor, B.**, Troja, E., 2022. *Continued Chandra monitoring of GW170817 at 4.8 yr post-merger*. GCN, 32065.
- O'Connor, B.**, Cenko., S. B., Troja, E., Dichiara, S., et al., 2022. *GRB 220408A: Lowell Discovery Telescope Optical Observations*. GCN, 31875.
- O'Connor, B.**, Troja, E., Gottlieb, A., 2022. *GRB 211227A: Gemini South Optical Observations*. GCN, 31376.
- O'Connor, B.**, Cenko., S. B., Troja, E., Gottlieb, A., et al., 2022. *GRB 211023B: LDT Optical Afterglow Detection*. GCN, 31000.
- O'Connor, B.**, Hammerstein, E., Cenko, S. B., Troja, E., et al., 2021. *GRB 210919A: LDT optical observations and candidate host galaxies*. GCN, 30934.
- O'Connor, B.**, Piro, L., Lotti, S., Ricci, R., Bruni, G., Zhang, B., Panessa, F., 2021. *Further monitoring of FRB 20201124A with Swift*. ATel, 14836.
- O'Connor, B.**, Troja, E., Zack, E., Dichiara, S., et al., 2021. *GRB 210704A: Lowell Discovery Telescope Optical Observations*. GCN, 30451.

- O'Connor, B.**, Dichiaro, S., Troja, E., Gatkine, P., et al., 2021. *Lowell Discovery Telescope Observations of ZTF21aayokph (AT2021lfa)*. GCN, 29952.
- O'Connor, B.**, Dichiaro, S., Troja, E., Gatkine, P., et al., 2021. *GRB 210504A: Lowell Discovery Telescope optical observations*. GCN, 29946.
- O'Connor, B.**, Kouveliotou, C., 2021. *Swift/XRT observations of PGIR21fjn/AT2021kgk*. ATel, 14571.
- O'Connor, B.**, Piro, L., Lotti, S., Ricci, R., et al., 2021. *Observations of FRB 20201124A with Swift/XRT and UVOT*. ATel, 14525.
- O'Connor, B.**, Dichiaro, S., Troja, E., Cenko, S. B., 2020. *GRB 200522A: Candidate Optical/nIR Counterpart from Gemini and HST Imaging*. GCN, 28100.

## Awards, Fellowships, & Grants

### AWARDS

- 2021 **Berman Award for Excellence in Experimental Physics**, The George Washington University

### FELLOWSHIPS

- 2016 **Davenport Research Fellowship**, Union College  
2013 **Presidential Scholarship**, Union College

### ACADEMIC HONOR SOCIETIES

- 2017 **Phi Beta Kappa**, Union College  
2017 **Sigma Xi**, Union College  
2016 **Sigma Pi Sigma**, Union College  
2016 **The Order of Omega**, Union College

### GRANTS

- 2022 **Chandra Cycle 23 Award (PI: B. O'Connor)**, Smithsonian Astrophysical Observatory (SAO) \$ 66,792

## Accepted Proposals

### AS PI:

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|----------|--|----------------|
| 2022     | <b>Gemini-North 2022B</b> , Identifying the fingerprints of r-process heavy metals in a short GRB – Awarded 9.5 hr of Rapid ToO  | GN-2022B-Q-130 |
| 2022     | <b>Gemini-South 2022B</b> , Identifying the fingerprints of r-process heavy metals in a short GRB – Awarded 9.5 hr of Rapid ToO  | GS-2022B-Q-134 |
| 2022     | <b>Gemini-South 2022B</b> , Off-axis afterglows from compact binary mergers – Awarded 8.5 hr of Rapid ToO  | GS-2022B-Q-232 |
| 2022     | <b>Lowell Discovery Telescope 2022B (Co-PI)</b> , Classically Scheduled Imaging and Spectroscopy of Transients and Their Host Galaxies – Awarded 5 full nights                     |                |
| 2022     | <b>Gemini-South 2022A</b> , Identifying the fingerprints of r-process heavy metals in a short GRB – Awarded 9.5 hr of Rapid ToO  | GS-2022A-Q-141 |
| 2022     | <b>Lowell Discovery Telescope 2022A</b> , Gamma-ray bursts and their host environments – Awarded 4 half-nights   |                |
| 2022     | <b>Chandra Cycle 23 Award</b> , The collimation and energetics of short GRBs: searching for jet-breaks with <i>Chandra</i> – Awarded 80 ks (2 ToOs)                                | \$ 66,792      |
| 2021     | <b>Gemini-South Director's Discretionary Time</b> , Probing the unusual long GRB 211227A with Gemini – Awarded 2.1 hr of Rapid ToO   | DT-2021B-019   |
| 2020-now | <b>Swift Target of Opportunity Requests</b> , Successfully requested 21 <i>Swift</i> ToOs of Galactic X-ray sources identified through the <i>Swift</i> Deep Galactic Plane Survey |                |

### AS OBSERVER:

- 2022 **Lowell Discovery Telescope 2022B (PI: S. B. Cenko)**, Target of Opportunity Transient Follow-Up with LDT
- 2022 **Lowell Discovery Telescope 2022B (PI: I. Andreoni)**, ToO Observations of Gravitational Wave Counterparts in the Fourth LIGO-Virgo-KAGRA Observing Run
- 2022 **Lowell Discovery Telescope 2022A (PI: A. Gottlieb)**, LDT observations of Fast Radio Bursts: counterparts and environment
- 2022 **Lowell Discovery Telescope 2022A (PI: Cenko)**, Target of Opportunity Gamma-Ray Burst Follow-Up with LDT
- 2022 **NICER Cycle 4 (PI: C. Kouveliotou)**, *NICER* ToO observations of *Swift*/XRT Deep Galactic Plane Survey (DGPS) sources
- 2022 **Chandra Cycle 23 (PI: C. Kouveliotou)**, *Chandra* ToO observations of Phase II *Swift* Deep Galactic Plane Survey (DGPS) sources
- 2021 **Lowell Discovery Telescope 2021B (PI: Cenko)**, Target of Opportunity Gamma-Ray Burst Follow-Up with LDT
- 2021 **Lowell Discovery Telescope 2021B (PI: S. Dichiara)**, Gamma-ray bursts and their host environments
- 2021 **Lowell Discovery Telescope 2021B (PI: E. Troja)**, LDT observations of Fast Radio Bursts: counterparts and environment
- 2021 **Chandra Director's Discretionary Time (PI: E. Troja)**, A luminous kilonova or a faint supernova? The curious case of GRB210704A
- 2021 **Chandra Director's Discretionary Time (PI: L. Piro)**, Unraveling the nature of the persistent radio source associated to FRB201124A with *Chandra*
- 2021 **Lowell Discovery Telescope 2021A (PI: S. Dichiara)**, Gamma-ray bursts and their host environments
- 2021 **Lowell Discovery Telescope 2021A (PI: E. Troja)**, LDT observations of Fast Radio Bursts: counterparts and environment
- 2021 **NICER Cycle 3 (PI: C. Kouveliotou)**, *NICER* ToO observations of *Swift*/XRT Deep Galactic Plane Survey (DGPS) sources
- 2020-2021 **NuSTAR Director's Discretionary Time (PI: C. Kouveliotou)**, *Swift* Galactic Plane Survey Key Project – Utilized 9 *NuSTAR* DDTs of Galactic X-ray sources identified through the *Swift* Deep Galactic Plane Survey. The Survey was a *NuSTAR* Legacy Survey Program until 2019.
- 2020 **XMM-Newton AO17 (PI: C. Kouveliotou)**, *XMM-Newton* ToO observations of *Swift* Galactic Plane Survey sources
- 2020-now **Swift Cycle 13 (PI: C. Kouveliotou)**, Towards a Population Census of Young Galactic X-ray Sources – A *Swift* Key Project

## Presentations

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### INVITED TALKS

- May 2022. *Shedding light on hostless short GRBs with large aperture telescopes*. Invited talk (45m) at Transient Astronomy Meeting (TAM). University of Maryland, College Park. Presented virtually.
- April 2022. *Shedding light on hostless short GRBs with large aperture telescopes*. Invited talk (45m) at Astronomy Group Meeting. The George Washington University. Washington, DC.
- March 2022. *Shedding light on hostless short GRBs with large aperture telescopes*. Invited talk (45m) at High Energy Astrophysics (HEAP) seminar. Universidad Nacional Autónoma de México. Presented virtually.

### CONTRIBUTED PRESENTATIONS

- March 2022. *A search for hostless short GRBs with large aperture telescopes*. Poster presentation at High Energy Astrophysics Division (HEAD 19) Meeting. Pittsburgh, PA.

December 2021. *Shedding light on hostless short GRBs with large aperture telescopes*. Contributed talk (20m) at IAU Symposium 363. Presented virtually.

June 2021. *Constraints on kilonova emission in two short GRBs at  $z \sim 0.5$* . Contributed talk (15m) at Marcel Grossman 16th Meeting. Presented virtually.

June 2021. *Constraints on kilonova emission in two short GRBs at  $z \sim 0.5$* . Contributed talk (15m) at European Astronomical Society (EAS) Annual Meeting. Presented virtually.

March 2021. *Constraints on kilonova emission in two short GRBs at  $z \sim 0.5$* . Contributed talk at 2021 Square Kilometer Array (SKA) Science Conference. Presented virtually.

January 2021. *Constraints on kilonova emission in two short GRBs at  $z \sim 0.5$* . Contributed talk (5m) at the virtual 237th meeting of the American Astronomical Society (AAS). Presented virtually.

October 2020. *The merger environments of short gamma-ray bursts*. Contributed talk (15m) at Chandra Frontiers in Time Domain Astrophysics. Presented virtually.

April 2019. *Revealing Trending YouTube Videos and their Relation to Power Laws*. Poster presentation at The George Washington University Research Days (second prize in the area of Studies in Business, Politics, and Society). Washington, DC.

May 2017. *Binary Stellar Wind Collisions with Orbital Motion*. Poster presentation at Annual Union College Steinmetz Symposium. Schenectady, NY.

April 2017. *Colliding Wind Binaries with Orbital Motion: Line Wind Formulation*. Poster presentation at National Conference on Undergraduate Research (NCUR). Memphis, TN.

October 2016. *Colliding Wind Binaries with Orbital Motion: 2D Line Wind Formulation in the Corotating Frame*. Poster presentation at Astronomical Society of New York (ASNY) Monference. Albany, NY.

## Teaching Experience

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2019 **Secondary Instructor**, The George Washington University  
 2017-2019 **Graduate Teaching Assistant**, The George Washington University

## Mentoring Experience

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2022 **Supervised the research of a first-year graduate student**, Seth Gagnon, The George Washington University  
 2021 **Supervised the research of a first-year graduate student**, Alex van Kooten, The George Washington University

## Outreach & Professional Development

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### SERVICE AND OUTREACH

2018 & 2019	<b>Astronomy Festival on the National Mall</b> , Volunteer	<i>Washington, DC</i>
2016-2017	<b>Union College Student Affairs Council</b> , Student Representative	<i>Schectady, NY</i>
2016-2017	<b>Union College Student Conduct Committee</b> , Committee Member	<i>Schectady, NY</i>
2016 & 2017	<b>Dudley Observatory at Museum of Innovation and Science</b> , Volunteer at Astronomy Days	<i>Schectady, NY</i>
2015-2016	<b>Union College Men's Club Soccer</b> , Treasurer	<i>Schectady, NY</i>
2015 & 2016	<b>Special Olympics New York Annual 5k rUndead Event Service</b> , Volunteer	<i>Schectady, NY</i>
2014, 2015, & 2016	<b>John Calvin Toll Day of Community Service</b> , Volunteer	<i>Schectady, NY</i>
2015	<b>Town of Niskayuna Recreational Soccer</b> , Volunteer Coach	<i>Niskayuna, NY</i>
2014	<b>Food Bank of Western Massachusetts</b> , Volunteer	<i>Hatfield, MA</i>

## PEER REVIEW

2022 - now **Journal referee**, The Astrophysical Journal (ApJ)

## PROFESSIONAL MEMBERSHIPS

2020 - now **Swift Deep Galactic Plane Survey (SGPS)**, Observation Lead

2020 - now **The Gamow Explorer Science Team**, Member

2020 - now **MeerKAT Galactic Plane Survey**, Member

## WEEKLY COLLOQUIA

2022 - now **UMD Transient Astronomy Meetings**, Member/Presenter

2019 - now **NASA GSFC GRB Lunch**, Member/Presenter

2018 - now **GWU Astronomy Group Meetings**, Member/Presenter