

curriculum vitae of

Jonathan Daniel Carney

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EDUCATION

2021 – present	Ph.D. in Physics	UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL, USA
	Advisors: Nicholas Law, Professor of Physics and Astronomy and Igor Andreoni, Assistant Professor of Physics and Astronomy	
2016 – 2021	B.S. in Physics and Mathematics	OREGON STATE UNIVERSITY, USA
	Thesis title: “Practical Mechanically Interlocked Molecules: A Model of Gas Adsorption in Metal Organic Frameworks Harboring Rotaxane Molecular Shuttles”.	
	Advisors: Cory Simon, Assistant Professor of Chemical Engineering and David Roundy, Associate Professor of Physics	

RESEARCH INTERESTS

- Machine learning for high-cadence time-domain astronomy
- Tidal disruption events
- Optical and high-energy transients
- Computer vision applications in astronomy

PROFESSIONAL MEMBERSHIPS

2024 – present	Zwicky Transient Facility Collaboration
2024 – present	Society of Photo-Optical Instrumentation Engineers (SPIE)
2024 – present	American Astronomical Society (AAS)

HONORS

2023	Outstanding Graduate Teaching Assistant Award	UNC CHAPEL HILL
2022	Teaching Fellow	UNC CHAPEL HILL

OBSERVING EXPERIENCE

- Southern Astrophysical Research (SOAR) Telescope: 7 classical nights (all remote), 2 Gravitational Wave Targets of Opportunity, 1 Einstein Probe Target of Opportunity, weekly AEON queue observations
- Gemini Observatory: 2 queue programs
- Argus Pathfinder Commissioning: 14 nights at the Pisgah Astronomical Research Institute (PARI), 3 nights at the Horace Williams (UNC) Airport

PROPOSALS

TELESCOPE TIME (AS PI)

- SOAR **2025B** - 36 hours AEON queue

TEACHING EXPERIENCE

INSTRUCTOR OF RECORD

- General Physics II: For Students of the Life Sciences

GRADUATE TEACHING ASSISTANT

- General Physics I: For Students of the Life Sciences
- General Physics II: For Students of the Life Sciences

UNDERGRADUATE TEACHING ASSISTANT

- Paradigms in Physics: Energy and Entropy
- Paradigms in Physics: Quantum Fundamentals
- Paradigms in Physics: Static Fields
- Paradigms in Physics: Oscillations and Waves
- Paradigms in Physics: Central Forces
- Paradigms in Physics: Periodic Systems

CONFERENCE ACTIVITY

CONTRIBUTED TALKS

1. **Carney, Jonathan** ; Andreoni, Igor "Chasing Infant Tidal Disruption Events with SOAR" *Third International Symposium of Science with the SOAR Telescope*
2. **Carney, Jonathan** ; Corbett, Hank ; Marshall, William ; Law, Nicholas ; Fitton, Shannon ; Galliher, Nathan ; Gonzalez, Ramses ; Machia, Lawrence ; Procter, Thomas ; Vasquez Soto, Alan "PSF Modeling with Deep Learning for the Argus Optical Array" *Proc. SPIE 13101, Software and Cyberinfrastructure for Astronomy VIII, 131010O*

POSTER PRESENTATIONS

1. **Carney, Jonathan** ; Corbett, Hank ; Marshall, William ; Law, Nicholas ; Fitton, Shannon ; Galliher, Nathan ; Gonzalez, Ramses ; Machia, Lawrence ; Procter, Thomas ; Vasquez Soto, Alan "PSF Modeling with Deep Learning for Next-Generation Survey Pipelines" *Rare Gems in Big Data*
2. **Carney, Jonathan** ; Corbett, Hank ; Marshall, William ; Law, Nicholas ; Fitton, Shannon ; Galliher, Nathan ; Gonzalez, Ramses ; Machia, Lawrence ; Procter, Thomas ; Vasquez Soto, Alan "PSF Modeling with Deep Learning for Next-Generation Survey Pipelines" *Hotwiring the Transient Universe VII*
3. **Carney, Jonathan** ; Corbett, Hank ; Law, Nicholas ; Marshall, William ; Fitton, Shannon ; Galliher, Nathan ; Gonzalez, Ramses ; Machia, Lawrence ; Procter, Thomas ; Vasquez Soto, Alan "Injecting simulated transient sources for next-generation time-domain survey pipelines with machine learning" *American Astronomical Society, AAS Meeting 243, id. 261.03*

COMMUNITY OUTREACH

2025

Astronomy on Tap in the Triangle talk: "Artificial Intelligence & the Search for Rare Events"

PUBLICATIONS

REFEREED JOURNAL PUBLICATIONS

1. **Carney, Jonathan** ; Roundy, David ; Simon, Cory "Statistical thermodynamic model of gas adsorption in a metal-organic framework harboring a rotaxane molecular shuttle" *Langmuir* 2020 36 (43), 13112-13123
2. Corbett, Hank ; **Carney, Jonathan** ; Gonzalez, Ramses ; Fors, Octavi ; Galliher, Nathan ; Glazier, Amy ; Howard, Ward S. ; Law, Nicholas M. ; Quimby, Robert ; Ratzloff, Jeffrey K. ; Soto, Alan Vasquez "The Evryscope Fast Transient Engine: Real-time Detection for Rapidly Evolving Transients" *The Astrophysical Journal Supplement Series, Volume 265, Issue 2, id.63, 23 pp.*

3. Galliher, Nathan W. ; Procter, Thomas ; Law, Nicholas M. ; Corbett, Hank ; Howard, Ward S. ; Vasquez Soto, Alan ; Gonzalez, Ramses ; Machia, Lawrence ; **Carney, Jonathan** ; Marshall, William J. "The ArgusSpec Prototype: Autonomous Spectroscopic Follow-up of Flares Detected by Large Array Telescopes" *Publications of the Astronomical Society of the Pacific*, Volume 136, Issue 3, id.035004, 18 pp.
4. Srinivasaragavan, Gokul P. ; Hamidani, Hamid ; Schroeder, Genevieve ; et al. (including **Carney, J.**) "EP250108a/SN 2025kg: A Jet-driven Stellar Explosion Interacting with Circumstellar Material" *The Astrophysical Journal Letters*, Volume 988, Issue 2, id.L60
5. Hu, Lei ; Cabrera, Tomás ; Palmese, Antonella ; et al. (including **Carney, J.**) "Kilonova Constraints for the LIGO/Virgo/KAGRA Neutron Star Merger Candidate S250206dm: GW-MMADS Observations" *The Astrophysical Journal Letters*, Volume 990, Issue 2, id.L46

SUBMITTED/IN PREPARATION

1. **Carney, Jonathan** ; Andreoni, Igor ; O'Connor, Brendan ; et al. "Optical/infrared observations of the extraordinary GRB 250702B: a highly obscured afterglow in a massive galaxy consistent with multiple possible progenitors" *arXiv:2509.22784*
2. O'Connor, Brendan ; Gill, Ramandeep ; DeLaunay, James ; et al. (including **Carney, Jonathan**) "Comprehensive X-ray Observations of the Exceptional Ultra-long X-ray and Gamma-ray Transient GRB 250702B with Swift, NuSTAR, and Chandra: Insights from the X-ray Afterglow Properties" *arXiv:2509.22787*
3. Swain, Vishwajeet ; Ahumada, Tomás ; Patil, Sameer K. ; et al. (including **Carney, Jonathan**) "GRB 250704B: An Off-axis Short GRB with a Long-Lived Afterglow Plateau" *arXiv:2509.02769*
4. Freeburn, James ; Andreoni, Igor ; de Soto, Kaylee M. ; et al. (including **Carney, Jonathan**) "Identification and photometric classification of extragalactic transients in the Vera C. Rubin Observatory's Data Preview 1" *arXiv:2507.22864*
5. Van Bommel, Natasha ; Zhang, Jielai ; Cooke, Jeff ; et al. (including **Carney, Jonathan**) "An extremely fast fading population II dwarf nova candidate: caught spectroscopically on the rise" *arXiv:2510.26682*
6. Eappachen, D. ; Balasubramanian, A. ; Swain, Vishwajeet ; et al. (including **Carney, J.**) "Characterising EP241107a: Multiwavelength Observations of an Einstein Probe-detected Fast X-ray Transient" *arXiv:2511.02562*

CONFERENCE PUBLICATIONS

1. Machia, Lawrence M. ; Corbett, Hank ; Vasquez Soto, Alan ; Gonzalez, Ramses ; Law, Nicholas M. ; Procter, Thomas ; Galliher, Nathan W. ; **Carney, Jonathan** ; Marshall, William ; Fitton, Shannon ; Glazier, Amy L. ; Walters, Glenn "No photon left behind: image quality optimization for the Argus Optical Array" *Proceedings of the SPIE*, Volume 13094, id. 1309458 10 pp. (2024)

CIRCULARS, TELEGRAMS, & RESEARCH NOTES

1. **Carney, J.** ; Jacobson-Galan, W. ; Andreoni, I. ; Schulze, S. ; Sollerman, J. "SOAR spectroscopic classification of AT 2025cfc as a Type II supernova with flash features" *Transient Name Server AstroNote* 2025-68
2. **Carney, J.** ; Stein, R. ; Hammerstein, E. ; Andreoni, I. ; Chornock, R. ; Yao, Y. "ZTF Classification of ZTF24abwsfdk (AT 2024admt) and ZTF25aabebeve (AT 2024agqx) as TDEs" *Transient Name Server AstroNote* 2025-50
3. **Carney, Jonathan** ; Hall, Xander J. ; Andreoni, Igor ; et al. "GRB 251026B: SOAR Classification of GOTO25jgl/SN2025absf as a Type Ia supernova" *GRB Coordinates Network, Circular Service*, No. 42519

4. **Carney, J.** ; Chornock, R. ; Freeburn, J. ; Andreoni, I. ; LeBaron, N. ; Patra, K. ; Somalwar, J. "Classification of optical transient ZTF24abfaake/AT 2024ule as a tidal disruption event (TDE) at redshift $z=0.112$ " *Transient Name Server AstroNote* 2024-318
5. **Carney, J.** ; Stein, R. ; Andreoni, I. ; et al. "ZTF Classification of ZTF25aajmtzs as a likely TDE at $z=0.136$ " *Transient Name Server AstroNote* 2025-118
6. Hammerstein, E. ; **Carney, J.** ; Andreoni, I. ; Stein, R. ; Chornock, R. ; Yao, Y. "ZTF Classification of ZTF25aacnkte/AT2025axp as a likely TDE" *Transient Name Server AstroNote* 2025-74
7. Stein, R. ; **Carney, J.** ; Andreoni, I. ; Chornock, R. ; Hammerstein, E. ; Margutti, R. ; Yao, Y. "ZTF Classification of ZTF25aafocs (AT2025bri) as a bright pre-peak TDE" *Transient Name Server AstroNote* 2025-67
8. Freeburn, James ; **Carney, Jonathan** ; Andreoni, Igor ; Cook, David "LIGO/Virgo/KAGRA S250206dm: SOAR galaxy targeted observations" *GRB Coordinates Network, Circular Service, No. 39196*
9. Stein, R. ; **Carney, J.** ; Andreoni, I. ; Earley, N. ; Qing, Y. ; Hammerstein, E. ; Chornock, R. ; Ravi, V. ; Yao, Y. "ZTF Classification of ZTF24abmaujk (AT 2024ymu) as a likely TDE" *Transient Name Server AstroNote* 2024-369
10. Freeburn, James ; Teague, Sarah ; **Carney, Jonathan** ; Andreoni, Igor ; Kilpatrick, Charles ; Volchansky, Olga ; Santos, Andre ; De Bom, Clecio "LIGO/Virgo/KAGRA S250206dm: continued in SOAR galaxy targeted observations and identification of one possible transient" *GRB Coordinates Network, Circular Service, No. 39286*
11. Freeburn, J. ; Andreoni, I. ; **Carney, J.** "GRB 241217A/EP241217b: SOAR afterglow detection" *GRB Coordinates Network, Circular Service, No. 38642*
12. Freeburn, J. ; Andreoni, I. ; **Carney, J.** "EP241126a: SOAR observations of the optical counterpart" *GRB Coordinates Network, Circular Service, No. 38409*
13. Freeburn, J. ; Andreoni, I. ; **Carney, J.** "EP241107a: SOAR upper limits" *GRB Coordinates Network, Circular Service, No. 38208*
14. Freeburn, J. ; Andreoni, I. ; **Carney, J.** "EP241021a: continued SOAR observations confirm optical rebrightening" *GRB Coordinates Network, Circular Service, No. 37942*
15. Stein, R. ; Andreoni, I. ; **Carney, J.** ; et al. "ZTF classification of AT 2025ars and AT 2025att as Tidal Disruption Events" *Transient Name Server AstroNote* 2025-251
16. Andreoni, I. ; Freeburn, J. ; **Carney, J.** ; et al. "A first collection of extragalactic transient candidates identified in Vera C. Rubin Observatory DP1 data" *Transient Name Server AstroNote* 2025-204
17. Hall, X. J. ; Hammerstein, E. ; **Carney, J.** ; et al. "ZTF/2DTS report of AT2025hbw/ZTF25aajjeon as a featureless TDE candidate at $z=0.628$ " *Transient Name Server AstroNote* 2025-131
18. Das, K. K. ; Kasliwal, M. M. ; Laz, T. J. D. ; Covarrubias, S. ; Fremling, C. ; Jacobson-Galan, W. ; Rose, S. ; Qin, Y. ; Cook, D. ; Sollerman, J. ; Gangopadhyay, A. ; Singh, A. ; Andreoni, I. ; **Carney, J.** ; Perley, D. ; Hinds, K. ; Wise, J. ; Rehemtulla, N. ; Miller, A. A. ; Schulze, S. "ZTF Complete Astronomical Transient Survey within 150 Mpc (CATS150)" *Transient Name Server AstroNote* 2025-64
19. Chornock, R. ; Stein, R. ; Hammerstein, E. ; et al. (including **Carney, J.**) "ZTF Classification of ZTF25aamdqhp as a likely TDE" *Transient Name Server AstroNote* 2025-309
20. Chornock, R. ; Hammerstein, E. ; Yao, Y. ; et al. (including **Carney, J.**) "ZTF Classification of AT 2022aeyz/ZTF22aaqccka as an AGN Turn-on Event in SDSS J002440.72-003019.9" *Transient Name Server AstroNote* 2025-286
21. Hosseinzadeh, G. ; Andrews, J. ; Sand, D. J. ; et al. (including **Carney, J.**) "PASSTA: The Public AEON Spectroscopic Survey for Transient Astronomy" *Transient Name Server AstroNote* 2025-280

22. O'Connor, B. ; Pasham, D. ; Andreoni, I. ; et al. (including **Carney, J.**) "GRB 250702B: Chandra X-ray Detection" *GRB Coordinates Network, Circular Service, No. 41309*
23. Dhawan, S. ; Goobar, A. ; Johansson, J. ; et al. (including **Carney, J.**) "Re-analysis of the Light Curve of SN 2022jli Reveals Strong Late-Time Interaction and Spectral Features Consistent With a Stripped-Envelope SN" *Transient Name Server AstroNote 2025-226*
24. Sheng, X. ; Angus, C. R. ; Nicholl, M. ; et al. (including **Carney, J.**) "Classification of 2025qhf as a Tidal Disruption Event" *Transient Name Server AstroNote 2025-223*
25. Stein, R. ; Das, K. ; Chornock, R. ; et al. (including **Carney, J.**) "ZTF Classifications of ZTF25aaxdtm (AT2025own) and ZTF25aaoewz (AT 2025iuh) as likely TDEs" *Transient Name Server AstroNote 2025-212*
26. Stein, R. ; Hammerstein, E. ; Chornock, R. ; et al. (including **Carney, J.**) "ZTF classification of AT 2024wya as a Tidal Disruption Event" *Transient Name Server AstroNote 2025-160*
27. Hammerstein, E. ; Chornock, R. ; Stein, R. ; et al. (including **Carney, J.**) "ZTF Classification of ZTF25aagfhmz (AT2025cyj), ZTF25aaknwwy (AT2025hee), and ZTF25aagrecw (AT2025gmz) as TDEs" *Transient Name Server AstroNote 2025-127*
28. Hammerstein, E. ; Stein, R. ; Chornock, R. ; et al. (including **Carney, J.**) "ZTF report of ZTF25aafwfzz/AT2025cyh as a possible TDE at $z=0.105$ " *Transient Name Server AstroNote 2025-89*
29. Sears, H. ; Blanchard, P. K. ; Chornock, R. ; et al. (including **Carney, J.**) "GRB 250702B/EP250702a: JWST/NIRCam Observations" *GRB Coordinates Network, Circular Service, No. 42145*

OTHER WORKS

1. Koss, Michael ; Aftab, Nafisa ; Allen, Steven W. ; et al. (including **Carney, Jonathan**) "The Advanced X-ray Imaging Satellite Community Science Book" *arXiv:2511.00253*