

## Curriculum Vitae – Eric Coughlin

Assistant Professor, Syracuse University  
Physics Building, Syracuse University, Syracuse, New York 13244

ecoughli@syr.edu

ecoughli.expressions.syr.edu

### RESEARCH INTERESTS

Gravitational Dynamics – Relativistic Jets – Radiative Transfer — Shocks — Supernovae — Tidal Disruption

### EDUCATION

2013 — 2016	Ph.D.	University of Colorado at Boulder, Boulder, Colorado Department: Astronomy and Astrophysics Advisor: Mitchell Begelman
2011 — 2013	M.S.	University of Colorado at Boulder, Boulder, Colorado Department: Astronomy and Astrophysics Advisor: Mitchell Begelman
2007 — 2011	B.S.	Lehigh University, Bethlehem, Pennsylvania Major: Astrophysics Advisor: George McCluskey

### RESEARCH APPOINTMENTS

08/2020 — Present	Assistant Professor Assistant Professor, Syracuse University, Syracuse, New York
07/2019 — 08/2020	Postdoctoral Researcher Hubble & Lyman Spitzer Fellow, Princeton University, Princeton, NJ
06/2018 — 07/2019	Postdoctoral Researcher Einstein Fellow, Columbia University, New York, NY
07/2016 — 05/2018	Postdoctoral Researcher Einstein Fellow, UC Berkeley, Berkeley, California
08/2011 — 06/2016	Graduate Research Assistant Research Assistant, CU Boulder, Boulder, Colorado

### PUBLICATIONS

62. *On (the impossibility of) producing periodic nuclear transients and quasi-periodic eruptions through tidal dissipation*  
Cufari, M., Nixon, C.J., **Coughlin, E.R.**, 2022, MNRASL, *Under Review*
61. *A Case for a Binary Black Hole System Revealed via Quasi-Periodic Outflows*  
Pasham, D.R., Tombesi, F., Sukova, P., Zajacek, M., Rakshit, S., **Coughlin, E.R.**, et al., *Nature*, *Under Review*
60. *The Stability of Tidally Disrupted Stellar Debris Streams: Exact Solutions, Critical Stream Density, and Hydrogen Recombination*  
**Coughlin, E.R.**, 2022, MNRAS, *Under Review*
59. *The Rebrightening of AT2018fyk as a repeating partial tidal disruption event*  
Wevers, T., **Coughlin, E.R.**, Pasham, D.R., et al., 2022, ApJL, *In Press*
58. *Simulated optical lightcurves of super-Eddington tidal disruption events with ZEBRA flows*  
Eyles-Ferris, R.A.J., Starling, R.L.C., O'Brien, P.T., Nixon, C.J., & **Coughlin E.R.**, 2022, MNRAS, *In Press*
57. *The Birth of a Relativistic Jet Following the Disruption of a Star by a Supermassive Black Hole*  
Pasham, D.R., Lucchini M., Laskar, T., Gompertz, B.P., Srivastav, S., Nicholl, M., Smartt, S.J., Miller-Jones, J.C.A., Alexander, K.D., Fender, R., Smith, G.P., Fulton, M., Dewangan, G., Gendreau, K., **Coughlin, E.R.**, et al., 2022, *Nature*, *In Press*
56. *Stars Crushed by Black Holes. III. Mild Compression of Radiative Stars by Supermassive Black Holes*

- Kundu, S.K., **Coughlin, E.R.**, & Nixon, C.J., 2022, ApJ, 939, 71
55. *A simple and accurate prescription for the tidal disruption radius of a star and the peak accretion rate in tidal disruption events*  
**Coughlin, E.R.**, & Nixon, C.J., 2022, MNRASL, 517, L26
54. *Spherically Symmetric Accretion onto a Compact Object through a Standing Shock: The Effects of General Relativity in the Schwarzschild Geometry*  
Kundu, S.K., & **Coughlin, E.R.**, 2022, MNRAS, 516, 481
53. *On the Impact of Relativistic Gravity on the Rate of Tidal Disruption Events*  
**Coughlin, E.R.**, & Nixon, C.J., 2022, ApJ, 936, 70
52. *Using the Hills Mechanism to Generate Repeating Partial Tidal Disruption Events and ASASSN-14ko*  
Cufari, M., **Coughlin, E.R.**, & Nixon, C.J., 2022, ApJL, 929, L20
51. *Stellar Revival and Repeated Flares in Deeply Plunging Tidal Disruption Events*  
Nixon, C.J., & **Coughlin, E.R.**, 2022, ApJL, 927, L25
50. *A Physical Model of Delayed Rebrightenings in Shock-interacting Supernovae without Narrow-Line Emission*  
**Coughlin, E.R.**, & Zrake, J., 2022, ApJ, 927, 148
49. *Stars Crushed by Black Holes. II. A Physical Model of Adiabatic Compression and Shock Formation in Tidal Disruption Events*  
**Coughlin, E.R.**, & Nixon, C.J., 2022, ApJ, 926, 47
48. *The Eccentric Nature of Eccentric Tidal Disruption Events*  
Cufari, M., **Coughlin, E.R.**, & Nixon, C.J., 2022, ApJ, 924, 34
47. *Tidal Disruption Disks Formed and Fed by Stream-Stream and Stream-Disk Interactions in Global GRHD Simulations*  
Andalman, Z., Liska, M., Tchekhovskoy, S., **Coughlin, E.R.**, & Stone, N.C., 2021, MNRAS, 510, 1627
46. *Stars Crushed by Black Holes. I. On the Energy Distribution of Stellar Debris in Tidal Disruption Events*  
Norman, S.M.J., Nixon, C.J., & **Coughlin, E.R.**, 2021, ApJ, 923, 184
45. *Partial, Zombie, and Full Tidal Disruption of Stars by Supermassive Black Holes*  
Nixon, C.J., **Coughlin, E.R.**, & Miles, P.R., 2021, ApJ, 922, 168
44. *Dynamical Stability of Giant Planets: the Critical Adiabatic Index in the Presence of a Solid Core*  
Kundu, S.K., **Coughlin, E.R.**, Youdin, A.N., & Armitage, P.J., 2021, MNRAS, 507, 6215
43. *Non-thermal Filaments from the Tidal Destruction of Clouds in the Galactic Center*  
**Coughlin, E.R.**, Nixon, C.J., & Ginsburg, A., 2021, MNRAS, 501, 1868
42. *Structured, Relativistic Jets Driven by Radiation*  
**Coughlin, E.R.**, & Begelman, M.C., 2020, MNRAS, 499, 3158
41. *The Persistence of Pancakes and the Revival of Self-gravity in Tidal Disruption Events*  
**Coughlin, E.R.**, Nixon, C.J., & Miles, P.R., 2020, ApJ, 900, L39
40. *Fallback Rates from Partial Tidal Disruption Events*  
Miles, P.R., **Coughlin, E.R.**, & Nixon, C.J., 2020, ApJ, 899, 36
39. *Variability in Short Gamma-ray Bursts: Gravitationally Unstable Tidal Tails*  
**Coughlin, E.R.**, Nixon, C.J., Barnes, J., Metzger, B.D., & Margutti, R., 2020, ApJ, 896, L38
38. *The Structure of Nearly Isothermal, Adiabatic Shockwaves*

- Coughlin, E.R.**, 2020, MNRAS, 496, L43
37. *The Gravitational Instability of Adiabatic Filaments*  
**Coughlin, E.R.**, & Nixon, C.J., 2020, ApJS, 247, 51, 18pp
  36. *Short Gamma-ray Bursts and the Decompression of Neutron Star Matter in Tidal Streams*  
Nixon, C.J., **Coughlin, E.R.**, & Pringle, J.E., 2020, ApJL, 900, L12
  35. *Emission from Elliptical Streams of Dusty Debris around White Dwarfs*  
Nixon, C.J., Pringle, J.E., **Coughlin, E.R.**, Swan, A., & Farihi, J., 2020, arXiv: 2006.07639
  34. *A Mildly Relativistic Outflow from the Energetic, Fast-rising Blue Optical Transient CSS161010 in a Dwarf Galaxy*  
Coppejans, D.L., Margutti, R., Terreran, G., Nayana, A.J., **Coughlin, E.R.**, et al., 2020, ApJL, 895, 23
  33. *Partial Stellar Disruption by a Supermassive Black Hole: Is the Lightcurve Really Proportional to  $t^{-9/4}$ ?*  
**Coughlin, E.R.**, & Nixon, C.J., 2019, ApJL, 883, L17
  32. *Energy-conserving, Relativistic Corrections to Strong Shock Propagation*  
**Coughlin, E.R.**, 2019, ApJ, 880, 108
  31. *The Influence Black Hole Binarity on Tidal Disruption Events*  
**Coughlin, E.R.**, Armitage, P.J., Lodato, G., & Nixon, C., 2019, SSRv, 215, 45
  30. *On the Diversity of Fallback Rates from Tidal Disruption Events with Accurate Stellar Structure*  
Golightly, E.C.A., Nixon, C.J., & **Coughlin, E.R.**, 2019, ApJ, 882, L26
  29. *Ultra-deep Tidal Disruption Events: Prompt Self-intersections and Observables*  
Darbha, S., **Coughlin, E.R.**, Kasen, D., & Nixon, C., 2019, MNRAS, 488, 5267
  28. *Weak Shock Propagation with Accretion. III. A Numerical Study on Shock Propagation and Stability*  
Ro, S., **Coughlin, E.R.**, & Quataert, E., 2019, ApJ, 878, 150
  27. *Thawing the Frozen-in Approximation: Implications for Self-gravity in Deeply-plunging Tidal Disruption Events*  
Steinberg, E., **Coughlin, E.R.**, Stone, N., & Metzger, B.D., 2019, MNRAS, 485, L146
  26. *Black Hole Accretion Disks and Luminous Transients in Failed Supernovae from Non-rotating Supergiants*  
Quataert, E., Lecoanet, D., & **Coughlin, E.R.**, 2019, MNRAS, 485, L83
  25. *An Embedded X-ray Source Shines Through the Aspherical AT2018COW: Revealing the Inner Workings of the Most Luminous Fast-evolving Optical Transients*  
Margutti, R., Metzger, B.D., Chornock, R., et al. (incl. **Coughlin, E.R.**), 2019, ApJ, 872, 18
  24. *Tidal Disruption Events: the Role of Stellar Spin*  
Golightly, E., **Coughlin, E.R.**, & Nixon, C., 2019, ApJ, 872, 163
  23. *Gravitational Interactions of Stars with Supermassive Black Hole Binaries. II. Hypervelocity Stars*  
Darbha, S., **Coughlin, E.R.**, Kasen, D., & Quataert, E., 2019, MNRAS, 482, 2132
  22. *Weak Shock Propagation with Accretion. II. Stability of Self-similar Solutions*  
**Coughlin, E.R.**, Quataert, E., & Ro, S., 2018, ApJ, 874, 58
  21. *Weak Shock Propagation with Accretion. I. Self-similar Solutions and Application to Failed Supernovae*  
**Coughlin, E.R.**, Quataert, E., & Ro, S., 2018, ApJ, 863, 158
  20. *Stellar Binaries Incident on Supermassive Black Hole Binaries: Implications for Double Tidal Disruption Events, Calcium-rich Transients, and Hypervelocity Stars*  
**Coughlin, E.R.**, Darbha, S., Kasen, D., & Quataert, E., 2018, ApJ, 863, L24

19. *A Loud Quasi-periodic Oscillation after a Star is Disrupted by a Massive Black Hole*  
Pasham, D.J., et al. (incl. **Coughlin, E.R.**), 2018, *Science*, 363, 531
18. *Super-Eddington Accretion in Tidal Disruption Events: The Impact of Realistic Fallback Rates on Accretion Rates*  
Wu, S., **Coughlin, E.R.**, & Nixon, C., 2018, *MNRAS*, 478, 3016
17. *Tidal Disruption by Extreme Mass Ratio Binaries and Application to ASASSN-15lh*  
**Coughlin, E.R.**, & Armitage, P.J., 2018, *MNRAS*, 474, 3857
16. *Gravitational Interactions of Stars with Supermassive Black Hole Binaries. I. Tidal Disruption Events*  
Darbha, S., **Coughlin, E.R.**, Kasen, D., & Quataert, E., 2018, *MNRAS*, 477, 4009
15. *A Physical Model of Mass Ejection in Failed Supernovae*  
**Coughlin, E.R.**, Quataert, E., Fernandez, R., & Kasen, D., 2018, *MNRAS*, 477, 1225
14. *Mass Ejection in Failed Supernovae: Variation with Stellar Progenitor*  
Fernandez, R., Quataert, E., Kashiyama, K., & **Coughlin, E.R.**, 2018, *MNRAS*, 476, 2366
13. *Circumbinary Discs from Tidal Disruption Events*  
**Coughlin, E.R.**, & Armitage, P.J., 2017, *MNRAS*, 471, L115
12. *Spherically Symmetric, Cold Collapse: the Exact Solutions and a Comparison with Self-Similar Solutions*  
**Coughlin, E.R.**, 2017, *ApJ*, 835, 40
11. *Tidal Disruption Events from Supermassive Black Hole Binaries*  
**Coughlin, E.R.**, Armitage, P.J., Nixon, C., & Begelman, M.C., 2017, *MNRAS*, 465, 3840
10. *Electric and Magnetic Variations in the Near-Mars Environment*  
Fowler, C.M., Andersson, L., Halekas, J., Espley, J.R., Mazelle, C., **Coughlin, E.R.**, et al., 2017, *JGR*, 122, 8536
9. *The Fine Line Between Total and Partial Tidal Disruption Events*  
Mainetti, D., Lupi, A., Campana, S., Colpi, M., **Coughlin, E.R.**, Guillochon, J., & Ramirez-Ruiz, E., 2017, *A&A*, 600, 124
8. *The Radiation Hydrodynamics of Relativistic Shear Flows*  
**Coughlin, E.R.**, & Begelman, M.C., 2016, *ApJ*, 821, 21
7. *On the Structure of Tidally-disrupted Stellar Debris Streams*  
**Coughlin, E.R.**, Nixon, C., Begelman, M.C., & Armitage, P.J., 2016, *MNRAS*, 459, 3089
6. *Post-periastron Pancakes: Sustenance for Self-gravity in Tidal Disruption Events*  
**Coughlin, E.R.**, Nixon, C., Begelman, M.C., Armitage, P.J., & Price, D.J., 2016, *MNRAS*, 455, 3612
5. *Viscous Boundary Layers of Radiation-dominated, Relativistic Jets. II. The Free-streaming Jet Model*  
**Coughlin, E.R.**, & Begelman, M.C., 2015, *ApJ*, 809, 2
4. *Viscous Boundary Layers of Radiation-dominated, Relativistic Jets. I. The Two-stream Model*  
**Coughlin, E.R.**, & Begelman, M.C., 2015, *ApJ*, 809, 1
3. *Variability in Tidal Disruption Events: Gravitationally Unstable Streams*  
**Coughlin, E.R.**, & Nixon, C., 2015, *ApJ*, 808, L11
2. *The General Relativistic Equations of Radiation Hydrodynamics in the Viscous Limit*  
**Coughlin, E.R.**, & Begelman, M.C., 2014, *ApJ*, 797, 103

1. *Hyperaccretion During Tidal Disruption Events: Weakly Bound Debris Envelopes and Jets*  
Coughlin, E.R., & Begelman, M.C., 2014, ApJ, 781, 82

## TEACHING EXPERIENCE

- 08/2022 — 12/2022 Independent Study (PHY 690)  
Worked with Syracuse University graduate student Daniel Paradiso on propagation of sub-energetic blastwaves including gravitational fields.
- 01/2022 — 05/2022 Advanced Graduate Course (PHY 890)  
Designed and implemented an independent study with Duncan Brown, Charles Brightman Professor of Physics, on tides in interacting systems and applications to compact object coalescence.
- 01/2022 — 05/2022 Stellar and Interstellar Astrophysics (PHY 317)  
Instructor; upper level course for majors and non-majors that offers an overview of contemporary/modern astrophysics; typical enrollment ~ 15 students.
- 08/2021 — 12/2021 Independent Study (PHY 690)  
Designed and implemented an independent study with Duncan Brown, Charles Brightman Professor of Physics, on gravitational physics and fluid dynamics of compact objects.
- 08/2021 — 12/2021 Introductory Electricity and Magnetism (PHY 212)  
Instructor for calculus-based, introductory electromagnetism typical enrollment ~ 200 students, non-majors
- 08/2020 — 12/2020 Independent Study (PHY 690)  
Worked with Syracuse University student Faraz Chahili on an independent study of the disruption of asteroids by white dwarfs.

## ADVISING EXPERIENCE

- 10/2022 — Present Mentor/Advisor for Syracuse University undergraduate student Julia Fancher  
Focus of Research: Numerical simulations of tidal disruption events
- 06/2022 — Present Mentor/Advisor for Syracuse University graduate student Daniel Paradiso  
Focus of Research: Weak shock propagation in failed and sub-energetic supernovae; perturbation theory; fluid and gas dynamics.
- 10/2020 — Present Mentor/Advisor for Syracuse University undergraduate student Matt Cufari  
Focus of Research: Modeling tidal disruption events on elliptical and hyperbolic orbits; understanding Hills-populated tidal disruption events.  
Publications: Cufari, M., Coughlin, E.R., Nixon, C.J., 2022, ApJ, 924, 34  
Cufari, M., Coughlin, E.R., Nixon, C.J., 2022, ApJL, 929, L20  
Cufari, M., Coughlin, E.R., Nixon, C.J., 2022, MNRASL, *Under Review*
- 05/2020 — Present Mentor/Advisor for Syracuse University graduate student Suman Kumar Kundu  
Focus of Research: Modeling and understanding the thermo- and hydrodynamic stability of giant-planet atmospheres; stability of standing accretion shocks in core-collapse supernovae; fluid dynamics; deep tidal disruption events  
Publications: Kundu, S.K., Coughlin, E.R., Youdin, A.N., Armitage, P.J., 2021, MNRAS, 507, 6215  
Kundu, S.K., Coughlin, E.R., MNRAS, *In Press*  
Kundu, S.K., Coughlin, E.R., Nixon, C.J., ApJ, *Under Review*
- 05/2019 — 05/2021 Mentor/Advisor for Syracuse University graduate student Patrick Miles  
Focus of Research: Hydrodynamical and analytical modeling of the evolution of partial tidal disruption events.  
Publications: Miles, P.R., Coughlin, E.R., Nixon, C.J., 2020, ApJ, 899, 36  
Coughlin, E.R., Nixon, C.J., Miles, P.R., 2020, ApJL, 900, 39  
Nixon, C.J., Coughlin, E.R., Miles, P.R., 2021, ApJ, 922, 168

Current Occupation: Software Engineer at Lawrence Livermore National Lab

- 08/2017 — 09/2019 Mentor/Advisor for Leicester University graduate student Elen Golightly  
Focus of Research: Numerical simulations of tidal disruption events of rotating stars and stars with realistic stellar structure.  
Publications: Golightly, E.C.A., Coughlin, E.R., Nixon, C.J., 2019, ApJ, 872,163  
Golightly, E.C.A., Nixon, C.J., Coughlin, E.R., 2019, ApJL, 882, 26
- 08/2016 — 09/2019 Mentor/Advisor for UC Berkeley graduate student Siva Darbha  
Focus of Research: Tidal disruption events by supermassive black hole binaries; properties of hypervelocity stars ejected by supermassive black hole binaries.  
Publications: Darbha, S., Coughlin, E.R., Kasen, D., & Quataert, E., 2018, MNRAS, 477, 4009  
Darbha, S., Coughlin, E.R., Kasen, D., & Quataert, E., 2019, MNRAS, 482, 2132  
Darbha, S., Coughlin, E.R., Kasen, D., & Quataert, E., 2019, MNRAS, 488, 5267
- 01/2017 — 08/2018 Mentor/Advisor for UC Berkeley undergraduate student Samantha Wu  
Focus of Research: Simulations of tidal disruption events to assess super-Eddington accretion; using and developing analytical models of accretion discs. Current NSF GRFP Fellow.  
Publications: Wu, S., Coughlin, E.R., & Nixon, C., 2018, MNRAS, 478, 3016

#### **OUTREACH**

- 06/2022 — 08/2022 One of four SU professors, alongside current department chair Jenny Ross, to initiate the Syracuse University Research in Physics (SURPh) program. Worked with two high school students from Syracuse City School District for 6 weeks on a project on stellar evolution and tidal disruption events; funded as part of an MPS-High supplement to NSF grant AST-2006684.
- 05/20/2022 Led discussion about supermassive black holes and career path as a scientist to 4, AP physics classrooms at Ithaca High School, Ithaca, NY.
- 4/22/2022 Led a virtual presentation and panel discussion with Kathryn Gabriel to ~ 150 art educators across the country on our science and art program. Sponsored by the National Art Educators Association.
- 08/2020 — 02/2021 Designed a Science and Art Curriculum with Kathryn Gabriel  
Working with Kathryn Gabriel, a professional artist and art teacher at Fayetteville-Manlius High School in New York, to develop a multidisciplinary curriculum that blends science and art. Individual programs and modules will be co-taught in the classroom, with standalone units (in video format) available for download for use anywhere.
- 01/2020 — 02/2020 Created and Lead a Science and Art Program at Emmaus High School  
Collaborated with Alexis Soboleski, an art teacher at Emmaus High School, Emmaus, PA, to teach a class combining science and art; led a three-class lecture series on tidal disruption events; created visualizations of tidal disruption events with gelatin molding and Corel Painter; critically assessed the progress and works of the students.
- 11/2019 Astronomy on Tap, Trenton  
Gave an Astronomy on Tap talk in Trenton, NJ about tidal disruption events
- 11/2016 — 05/2018 Bay Area Scientist in School, Berkeley, California  
Traveled to local elementary schools to give science demonstrations

#### **RECENT PRESENTATIONS**

*Galactic Flares from Repeating Tidal Disruption Events*

Colloquium, University of Florida, 2022, April 7th

*A Mechanism for Interacting Supernovae and Rebrightening without Narrow Line Emission*

High-Energy Astrophysics Division (HEAD) Meeting, 2022, March 17th  
*Stars Crushed by Black Holes in Extreme Tidal Disruption Events*  
 Deutsches Elektronen-Synchrotron (DESY) Seminar, 2022, February 4th  
*Stars Crushed by Black Holes*  
 Colloquium, Cornell University, 2021, December 4th  
*Mildly Relativistic Shock Propagation*  
 Astroplasmas Seminar, Princeton University, 2020, July 17th  
*A Universal Fallback Rate from Partial Tidal Disruption Events*  
 235th Meeting of the AAS, Honolulu, HI, 2020, January 7th  
*Self-similar, Weak Shock Propagation in Failed Supernovae*  
 233rd Meeting of the AAS, Seattle, WA, 2019, January 8th  
*A Dynamical Picture of Failed Supernovae*  
 CITA Seminar, CITA, Toronto, Canada, 2018, December 17th  
*Self-similar Shock Propagation with Accretion*  
 Einstein Fellows Symposium, Harvard University, Cambridge, MA, 2018, October 2nd  
*Accretion-powered Transients from Fallback in Failed Supernovae*  
 International Astronomical Union General Assembly, Vienna, Austria, 2018 August 25th  
*Weak Shock Propagation with Accretion*  
 Santa Barbara ZTF Meeting, Charles Munger Residence, Santa Barbara, CA, 2018 July 28th  
*Long Duration Transients from Failed Supernovae*  
 Using Tidal Disruption Events to Study Supermassive Black Holes, Aspen, CO, 2018 January 20th  
*Failed Supernovae and Their Surprising Explosions*  
 Lunch Talk, Lehigh University, Bethlehem, PA, 2017 December 4th  
*Failed Supernovae Unfailed*  
 ITC Colloquium, Harvard University, Cambridge, MA, 2017 November 2nd  
*A Physical Model for Mass Ejection in Failed Supernovae*  
 Einstein Fellows Symposium, Harvard University, Cambridge, MA, 2017 October 12th  
*Tidal Disruption Events by Supermassive Black Hole Binaries*  
 Colloquium, University of Leicester, UK, 2017 September 20th  
*The Diversity of Tidal Disruption Events from Supermassive Black Hole Binaries*  
 Piercing the Sphere of Influence Meeting, Cambridge University, UK, 2017 September 13th  
*Stellar Death by Black Hole: How Tidal Disruption Events Unveil the High Energy Universe*  
 2017 HEAD Meeting, Dissertation Prize Lecture, Sun Valley, ID, 2017 August 23rd  
*Stars Destroyed by Binary Black Holes: Making a Mess in the Center of a Galaxy*  
 Lunch Talk, University of Nevada at Las Vegas, Las Vegas, 2017 March 23rd  
*Tidal Disruption Events from Binary Supermassive Black Holes*  
 Einstein Fellows Symposium, Harvard University, Cambridge, 2016 October 18th

#### ORGANIZED CONFERENCES/PROGRAMS

- 2024 “Towards an Understanding of Tidal Disruption Events,” Alexander, K.D., **Coughlin, E.R.**, Gezari, S., Nixon, C.J. One of four scientific organizers for a four-week, Kavli Institute for Theoretical Physics program, April — May, 2024, Santa Barbara, CA. Also the organizer of the conference associated with the program, “Anticipating the Rising Tide of Tidal Disruption Events.”
- 2022 “Theoretical Advances in Tidal Disruption Events,” **Coughlin, E.R.**  
 Organized 90-minute special session at the High-Energy Astrophysics Division (HEAD) meeting of the American Astronomical Society, Pittsburgh, PA, 2022, March 15th,

#### SUCCESSFUL PROPOSALS

- 2022 “Stars Crushed at the Gravitational Hand of a Supermassive Black Hole,” **Coughlin, E.R.**  
 Oakridge Associated Universities Ralph E. Powe Junior Faculty Enhancement Award  
 Award: \$10,000
- 2022 MPS-High Supplemental Award, **Coughlin, E.R.**  
 National Science Foundation, Supplement to Grant AST-2006684  
 Award: \$12,000
- 2021 Research Experience for Undergraduates Supplemental Award, **Coughlin, E.R.**  
 National Science Foundation, Supplement to Grant AST-2006684  
 Award: \$6,897
- 2020 “Understanding the Long-term Evolution of Tidal Disruption Events,” **Coughlin, E.R.**

- National Science Foundation, Astronomy and Astrophysics Grant, AST-2006684  
Award: \$291,724
- 2019 “The Appearance of Disappearing Stars: Mass Ejection, Fallback Accretion, and Jets from Weak and Failed Supernovae,” **Coughlin, E.R.**  
NASA Hubble Fellowship Proposal  
Award: \$330,000
- 2016 “GPU-enabled General Relativistic Simulations of Jetted Tidal Disruptions of Stars by Supermassive Black Holes,” Tchekhovskoy, A., Metzger, B.D., Stone, N., & **Coughlin, E.R.**  
Computing Proposal for Time on NASA Bluewaters Supercomputer  
Award: 10,000,000 GPU Hours
- 2016 “Black Hole Enlightenment from Tidal Disruption Events,” **Coughlin, E.R.**  
NASA Einstein Fellowship Proposal  
Award: \$330,000
- 2016 “Tidal Disruption Events from Supermassive Black Hole Binaries,” **Coughlin, E.R.**, Begelman, M.C., Armitage, P.J., & Nixon, C.J.  
Computing Proposal for Time on Janus Supercomputer, Boulder, Colorado  
Award: 500,000 CPU hours

### HONORS AND AWARDS

- 2022 Ralph E. Powe Junior Faculty Enhancement Award  
2022 Syracuse University Teaching Excellence Award (for large-class instruction)  
2019 Hubble Fellowship (taken to Princeton University)  
2019 Lyman Spitzer Jr. Fellowship (Princeton University)  
2019 CITA Fellowship (declined)  
2018 International Astronomical Union Thesis Prize  
2017 High Energy Division of the American Astronomical Society Dissertation Prize  
2016 R.N. Thomas Award (University of Colorado, Boulder)  
2016 Theoretical Astrophysics Center Fellowship (UC Berkeley)  
2016 Einstein Fellowship (taken to UC Berkeley)  
2016 Hubble Fellowship (declined)  
2016 Burke Fellowship (Caltech; declined)  
2014 Cooke Graduate Fellowship  
2013 Carl Hansen Memorial Fellowship  
2011 University of Colorado at Boulder Graduate Research Fellowship  
2011 Highest Institutional Honors, Lehigh University

### PUBLIC SERVICE

- Manuscript Referee* Monthly Notices of the Royal Astronomical Society  
The Astrophysical Journal  
The Astrophysical Journal Letters  
Science Advances  
Nature  
Computational Astrophysics and Cosmology  
Physical Review  
Physical Review Letters  
Publications of the Astronomical Society of Japan  
Springer Space Science Reviews  
Physics of Fluids  
Astronomy and Astrophysics
- Proposal Reviewer* NASA Astrophysics Theory Program  
Neil Gehrels Swift Observatory Guest Investigator Program  
NASA Earth and Space Science Fellowship  
Polish National Science Center Grant

### PROFESSIONAL MEMBERSHIPS

- 2022 — Present American Physical Society  
2013 — Present American Astronomical Society



2011 — Present

Phi Beta Kappa