

# Tarraneh Eftekhari

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## EDUCATION

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| HARVARD UNIVERSITY   | <i>Expected May 2021</i> |
| <b>Ph.D.</b> , Astronomy and Astrophysics  |                          |
| <ul style="list-style-type: none"><li>• Thesis: Unveiling the Transient Radio Sky</li><li>• Advisor: Edo Berger, Ph.D.</li></ul>                                   |                          |
| HARVARD UNIVERSITY   | 2015–2017                |
| <b>M.A.</b> , Astronomy and Astrophysics   |                          |
| <ul style="list-style-type: none"><li>• Thesis: Radio Monitoring of the Tidal Disruption Event Swift J1644+57</li><li>• Advisor: Edo Berger, Ph.D.</li></ul>       |                          |
| UNIVERSITY OF NEW MEXICO   | 2010–2014                |
| <b>B.S.</b> , Astrophysics, Minor in Mathematics, <i>Magna Cum Laude</i>   |                          |
| <ul style="list-style-type: none"><li>• Honors Thesis: A Low Frequency Survey of Giant Pulses from the Crab Pulsar</li><li>• Advisor: Greg Taylor, Ph.D.</li></ul> |                          |

## RESEARCH EXPERIENCE

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|---|--------------|
| HARVARD UNIVERSITY  | 2015–Present |
| Graduate Research Assistant   |              |
| <ul style="list-style-type: none"><li>• Supervisor: Edo Berger, Ph.D.</li></ul>   |              |
| HARVARD UNIVERSITY  | 2015–2016    |
| Laboratory Assistant  |              |
| <ul style="list-style-type: none"><li>• Development of a Low-Noise Amplifier for the Large Aperture Experiment to Detect the Dark Ages</li><li>• Supervisor: Lincoln Greenhill, Ph.D.</li></ul> |              |
| UNIVERSITY OF NEW MEXICO  | 2013–2015    |
| Undergraduate Research Assistant  |              |
| <ul style="list-style-type: none"><li>• Supervisor: Greg Taylor, Ph.D.</li></ul>  |              |
| NETHERLANDS INSTITUTE FOR RADIO ASTRONOMY (ASTRON)  | 2014         |
| Summer Research Assistant   |              |
| <ul style="list-style-type: none"><li>• Heliospheric Faraday Rotation from the Crab Pulsar</li><li>• Supervisor: Richard Fallows, Ph.D.</li></ul>   |              |

## RELATED EMPLOYMENT

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|---|-----------|
| HARVARDX  | 2017–2020 |
| Content Developer   |           |
| <ul style="list-style-type: none"><li>• University Chemistry: Molecular Foundations and Global Frontiers</li><li>• Reclaiming Argument: An Introduction to Logical Reasoning</li><li>• The FDA and Prescription Drugs: Current Controversies in Context</li><li>• Science of the Physical Universe 30: Super-Earths and Life</li><li>• Fundamentals of Neuroscience Part 3: The Brain</li></ul> |           |
| LONG WAVELENGTH ARRAY RADIO TELESCOPE   | 2013–2015 |
| Telescope Operator  |           |

## TEACHING

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HARVARD UNIVERSITY Spring 2018, 2019  
Head Teaching Fellow

- Science of the Physical Universe 22: From the Big Bang to the Brontosaurus and Beyond  
Prof: Irwin Shapiro, Ph.D.

HARVARD UNIVERSITY Spring 2017  
Teaching Fellow

- Science of the Physical Universe 22: From the Big Bang to the Brontosaurus and Beyond  
Prof: Irwin Shapiro, Ph.D.

## AWARDS

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| ALMA Cycle 7 Student Observing Support                                     | 2019 |
| ALMA Cycle 6 Student Observing Support                                     | 2018 |
| National Science Foundation Graduate Research Fellowship Honorable Mention | 2017 |
| Harvard University Bok Center Certificate of Distinction in Teaching       | 2017 |
| New Mexico Space Grant Consortium Scholarship                              | 2014 |
| University of New Mexico Undergraduate Research Award                      | 2013 |

## ACCEPTED OBSERVING PROPOSALS (AS PI)

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*VLA: 37.1 hr; ALMA: 39 hr; VLBA: 3 hr; Arecibo: 15 hr; Chandra: 135 ks; SMA: 3 tracks*

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| 1. Potential Analogs of the First Repeating Fast Radio Burst<br>5.1 hours; Very Large Array, B-Priority; ID: 20B-228                        | 2020 |
| 2. Testing the Connection Between Fast Radio Bursts and SLSNe with ALMA<br>9 hours; ALMA, C-Priority; ID: 2019.1.01663.S                    | 2019 |
| 3. The First Radio Source Associated with a SLSN: Constraining the SED<br>6.75 hours; Very Large Array, A-Priority; ID: 19B-252             | 2019 |
| 4. The First Radio Source Associated with a SLSN: Resolving the Emission<br>3 hours; Very Long Baseline Array, B-Priority; ID: 19B-248      | 2019 |
| 5. ALMA Follow-Up of NS-NS/NS-BH mergers from LIGO/Virgo Observing Run 3<br>15 hours; ALMA, A-Priority, ID: 2019.1.01513.T                  | 2019 |
| 6. Testing the Origin of the First Radio Source Associated with a SLSN Using Chandra<br>30 ks; Chandra + 3.75 hours joint VLA, ID: 21500179 | 2019 |
| 7. A Search for Fast Radio Bursts from the Superluminous Supernova PTF10hgi<br>15 hours; Arecibo, ID: A3331                                 | 2019 |
| 8. Testing the Connection Between Fast Radio Bursts and Superluminous Supernovae<br>11 hours; Very Large Array, B-Priority; ID: 19A-295     | 2019 |
| 9. Exploring Relativistic Transients with the SMA<br>3 tracks; Submillimeter Array, ID: 2019B-S019  | 2019 |
| 10. A Joint Radio-Optical Search for the Host Galaxies of FRBs<br>4 hours; Very Large Array DDT, B- and C-Priority; ID: 18B-366             | 2018 |
| 11. ALMA Follow-Up of NS-NS/NS-BH mergers from LIGO/Virgo Observing Run 3<br>15 hours, ALMA, A-Priority, ID: 2018.1.01617.T                 | 2018 |
| 12. Late-time X-ray and Radio Observations of the Unique Relativistic TDE Sw 1644+57<br>50 ks; Chandra + 3 hours VLA; ID: 19700497          | 2017 |

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|---|------|
| 13. Late-time Radio and X-ray Monitoring of the Relativistic TDE Sw 1644+57<br>3 hours; Very Large Array + 55 ks joint Chandra, A-Priority; ID: 17B-198 | 2017 |
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## PROFESSIONAL SERVICE

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| Referee for Monthly Notices of the Royal Astronomical Society                      | 2020–Present |
| Referee for The Astrophysical Journal  | 2019–Present |
| Referee for The Astrophysical Journal Letters                                      | 2019–Present |
| Mentor to first-year graduate students, Harvard Astronomy                          | 2019         |
| Graduate student panelist, Smithsonian Astrophysical Observatory Solar Physics REU | 2019         |
| Poster Judge, National Collegiate Research Conference                              | 2018         |
| Peer Review Facilitator, Chandra Cycle 19 Peer Review                              | 2017         |
| Graduate student panelist, Wellesley College                                       | 2017         |
| Mentor for Harvard University Women in Stem  | 2016         |

## OUTREACH

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|---|-----------|
| SEMINAR COORDINATOR, BEACON HILL SEMINARS   | 2018–2020 |
| <ul style="list-style-type: none"> <li>Designed and coordinated the first astronomy course, <i>Unveiling the Cosmos</i>, for the Beacon Hill Seminars, a community-based program for lifelong learning</li> </ul>   |           |
| LOCAL ORGANIZING COMMITTEE, COMSCI CON  | 2018      |
| <ul style="list-style-type: none"> <li>Reviewed applications for ComSciCon, a workshop on science communication for graduate students, by graduate students</li> <li>Organized the catering and food for 80 attendees for 3 days</li> </ul>   |           |
| VOLUNTEER, CAMBRIDGE EXPLORES THE UNIVERSE  | 2018      |
| <ul style="list-style-type: none"> <li>Led demonstrations at the Chandra booth at yearly astronomy event for the public</li> </ul>  |           |
| SPEAKER CHAIR AND BLOG WRITER, HARVARD SCIENCE IN THE NEWS  | 2016–2019 |
| <ul style="list-style-type: none"> <li>Selected and organized speakers for DayCon2017: Planet Earth, a free science conference for the public</li> <li>Wrote monthly short-form articles on popular science aimed at bridging the communication gap between scientists and non-scientists</li> </ul>  |           |
| MENTOR, SCIENCE CLUB FOR GIRLS  | 2016–2017 |
| <ul style="list-style-type: none"> <li>Developed and taught several mini-lectures on computers and programming as part of <i>Wearable Tech Week</i></li> <li>Helped local high school girls develop their own hands-on educational activities for elementary students</li> <li>Served as mentor for <i>Tech Team</i>, where girls developed an app aimed at solving one of the United Nations' Sustainable Development Goals</li> </ul> |           |
| DIGITAL MENTOR, YOUTHASTRONET   | 2016–2017 |
| <ul style="list-style-type: none"> <li>Supervised young middle school students nationwide as they collected and analyzed astronomical data using the MicroObservatory Robotic Telescope Network</li> <li>Answered students' astronomy questions on an online forum</li> </ul>   |           |
| TELESCOPE OPERATOR, UNIVERSITY OF NEW MEXICO  | 2013–2015 |
| <ul style="list-style-type: none"> <li>Led weekly observatory nights for the public</li> </ul>  |           |

## TECHNICAL SKILLS

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| <b>Computer Languages</b>    | PYTHON, L <sup>A</sup> T <sub>E</sub> X, HTML, CSS    |
| <b>Astronomical Software</b> | CASA, CIAO, XSPEC, DS9, Genesys RF & Microwave Design |

## INVITED TALKS AND CONFERENCE CONTRIBUTIONS

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1. Millimeter Transients with CMB-S4 2020  
*CMB-S4 Spring 2020 Collaboration Meeting, Lawrence Berkeley National Laboratory*
2. An Overview of FRB Environments (**Invited**) 2020  
*The Astrophysics of Fast Radio Bursts, Flatiron Institute*
3. Localizing Fast Radio Bursts and Their Host Galaxies (**Invited**) 2019  
*Toronto FRB Day, CITA/Dunlap Institute*
4. A Radio Source Coincident with a Superluminous Supernovae (**Invited**) 2019  
*Institute for Theory and Computation Luncheon, Harvard University*
5. Millimeter Transients in the Era of CMB Surveys 2019  
*Astrophysics with the CMB-S4 Survey, University of Chicago*
6. A Radio Source Coincident with the Superluminous Supernova PTF10hgi 2019  
*Columbia University, Department of Astronomy Pizza Lunch*
7. Identifying the Host Galaxies of Fast Radio Bursts (**Invited**) 2019  
*FRBs and their Possible Neutron Star Origins, Amsterdam*
8. Tidal Disruption Events and Fast Radio Burst 2018  
*Transients Group Meeting, CIERA Northwestern University*
9. Uncovering the Mystery of Fast Radio Bursts 2018  
*New Hampshire Astronomical Society*
10. Radio Monitoring of the Tidal Disruption Event Swift J1644+57 (*Poster*) 2018  
*Jerusalem Winter School in Theoretical Physics, The Physics of Astronomical Transients*
11. On the Association of Fast Radio Bursts and Their Hosts 2017  
*Workshop on Fast Radio Bursts, McGill University*
12. Multi-wavelength Monitoring of the Relativistic TDE Swift J1644+57 (*Poster*) 2017  
*American Astronomical Society 229th Meeting*
13. Tidal Disruption Events: A Multi-Wavelength Approach 2016  
*Time-Domain Astrophysics in the American Northeast*
14. A Low Frequency Survey of Giant Pulses from the Crab Pulsar (*Poster*) 2015  
*American Astronomical Society 225th Meeting 2015*

## FIRST AUTHOR PUBLICATIONS

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1. *Wandering Massive Black Holes or Analogs of the First Repeating Fast Radio Burst?*  
**T. Eftekhari**, E. Berger, B. Margalit, B. D. Metzger, P. K. G. Williams  
Astrophysical Journal, 895, 98, 2020 (arXiv:2001.02688)
2. *A Radio Source Coincident with the Superluminous Supernova PTF10hgi: Evidence for a Central Engine and an Analogue of the Repeating FRB121102?*  
**T. Eftekhari**, E. Berger, B. Margalit, et al.  
Astrophysical Journal Letters, 876, L10, 2019 (arXiv:1901.10479)
3. *Associating Fast Radio Bursts with Extragalactic Radio Sources: General Methodology and a Search for a Counterpart to FRB 170107*  
**T. Eftekhari**, E. Berger, P. K. G. Williams, P. K. Blanchard  
Astrophysical Journal, 860, 73, 2018 (arXiv:1802.09525)

4. *Radio Monitoring of the Tidal Disruption Event Swift J164449.3+573451. III. Late-time Jet Energetics and a Deviation from Equipartition*  
**T. Eftekhari**, E. Berger, B. A. Zauderer, et al.  
 Astrophysical Journal, 854, 86, 2018 (arXiv:1710.07289)
5. *Associating Fast Radio Bursts with Their Host Galaxies*  
**T. Eftekhari** & E. Berger  
 Astrophysical Journal, 849, 162, 2017 (arxiv: 1705.02998)
6. *A Low Frequency Survey of Giant Pulses from the Crab Pulsar*  
**T. Eftekhari**, K. Stovall, J. Dowell, F. K. Schinzel, G. B. Taylor  
 Astrophysical Journal, 829, 62, 2016 (arxiv:1607.08612)

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## PUBLICATIONS AS NTH AUTHOR

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1. *The Broad-band Counterpart of the Short GRB 200522A at  $z=0.5536$  : A Luminous Kilonova or a Collimated Outflow with a Reverse Shock?*  
 W. Fong. et al., 2020, *Submitted to ApJ*
2. *The Tidal Disruption Event AT 2018hyz II: Light-curve modelling of a partially disrupted star*  
 S. Gomez et al., 2020, MNRAS, 497, 1952
3. *AT 2018cow VLBI: No Long-Lived Relativistic Outflow*  
 M. F. Bietenholz et al., 2020, MNRAS, 491, 4735
4. *Two years of non-thermal emission from the binary neutron star merger GW170817: rapid fading of the jet afterglow and first constraints on the kilonova fastest ejecta*  
 A. Hajela et al., 2019, ApJ, 886, L17
5. *A Galaxy-Targeted Search for the Optical Counterpart of the Candidate NS-BH Merger S190814bv with Magellan*  
 S. Gomez et al., 2019, ApJ, 884, L55
6. *The Optical Afterglow of GW170817: An Off-axis Structured Jet and Deep Constraints on a Globular Cluster Origin*  
 W. Fong et al., 2019, 883, L1
7. *Follow-up of the Neutron Star Bearing Gravitational Wave Candidate Events S190425z and S190426c with MMT and SOAR*  
 G. Hosseinzadeh et al., 2019, 880, L4
8. *An embedded X-ray source shines through the aspherical AT2018cow: revealing the inner workings of the most luminous fast-evolving optical transients*  
 R. Margutti et al., 2019, ApJ, 872, 18
9. *Unveiling the Engines of Fast Radio Bursts, Super-Luminous Supernovae, and Gamma-Ray Bursts*  
 B. Margalit et al., 2018, MNRAS, 481, 2407
10. *Spitzer Space Telescope Infrared Observations of the Binary Neutron Star Merger GW170817*  
 V. A. Villar et al., 2018, 862, L11
11. *A Decline in the X-ray through Radio Emission from GW170817 Continues to Support an Off-Axis Structured Jet*  
 K. D. Alexander et al., 2018, 863, 18L
12. *A Precise Distance to the Host Galaxy of the Binary Neutron Star Merger GW170817 Using Surface Brightness Fluctuations*  
 M. Cantiello et al., 2018, ApJ, 854, 31L

13. *The Binary Neutron Star event LIGO/VIRGO GW170817 a hundred and sixty days after merger: synchrotron emission across the electromagnetic spectrum*  
R. Margutti et al., 2018, ApJ, 856, 18L
14. *Design and characterization of the Large-Aperture Experiment to Detect the Dark Age (LEDA) radiometer systems* D. Price et al., 2018, MNRAS, 478, 4193
15. *Improved Constraints on  $H_0$  from a combined analysis of gravitational-wave and electromagnetic emission from GW170817*  
C. Guidorzi et al., 2017, ApJ, 851, 36L
16. *A gravitational-wave standard siren measurement of the Hubble constant*  
B. P. Abbott et al., 2017, Nature, 551, 85
17. *‘The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/VIRGO GW170817. II. UV, Optical, and Near-IR Light Curves and Comparison to Kilonova Models*  
P. S. Cowperthwaite et al., 2017, ApJ, 848, 17L
18. *The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/VIRGO GW170817. III. Optical and UV Spectra of a Blue Kilonova From Fast Polar Ejecta*  
M. Nicholl et al., 2017, ApJ, 848, L18
19. *The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/VIRGO GW170817. IV. Detection of Near-infrared Signatures of r-process Nucleosynthesis with Gemini-South*  
R. Chornock et al., 2017, ApJ, 848, L19
20. *The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/VIRGO GW170817. V. Rising X-ray Emission from an Off-Axis Jet*  
R. Margutti et al., 2017, ApJ, 848, L20
21. *The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/VIRGO GW170817. VI. Radio Constraints on a Relativistic Jet and Predictions for Late-Time Emission from the Kilonova Ejecta*  
K. D. Alexander et al., 2017, ApJ, 848, L21
22. *The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/VIRGO GW170817. VII. Properties of the Host Galaxy and Constraints on the Merger Timescale*  
P. K. Blanchard et al., 2017, ApJ, 848, L22
23. *The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/VIRGO GW170817. VIII. A Comparison to Cosmological Short-duration Gamma-ray Bursts*  
W. Fong et al., 2017, ApJ, 848, L23
24. *Bifrost: a Python/C++ Framework for High-Throughput Stream Processing in Astronomy*  
M. D. Cranmer et al., 2017, JAI, 6, 1750007
25. *Empirical constraints on the origin of fast radio bursts: volumetric rates and host galaxy demographics as a test of millisecond magnetar connection*  
M. Nicholl et al., 2017, ApJ, 843, 84
26. *Bayesian Constraints on the Global 21-cm Signal from the Cosmic Dawn*  
G. Bernardi et al., 2016, MNRAS, 461, 3
27. *Digital Signal Processing using Stream High Performance Computing: A 512-input Broadband Correlator for Radio Astronomy*  
J. Kocz et al., JAI, 2015, 4 50003
28. *Pulsar Observations Using the First Station of the Long Wavelength Array and the LWA Pulsar Data Archive*

