

Tarraneh Eftekhari

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EDUCATION

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| HARVARD UNIVERSITY | <i>Expected May 2021</i> |
| Ph.D. , Astronomy and Astrophysics | |
| • Thesis: Unveiling the Transient Radio Sky | |
| • Advisor: Edo Berger, Ph.D. | |
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HARVARD UNIVERSITY | 2015–2017 |
| M.A. , Astronomy and Astrophysics | |
| • Thesis: Radio Monitoring of the Tidal Disruption Event Swift J1644+57 | |
| • Advisor: Edo Berger, Ph.D. | |
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UNIVERSITY OF NEW MEXICO | 2010–2014 |
| B.S. , Astrophysics, Minor in Mathematics, <i>Magna Cum Laude</i> | |
| • Honors Thesis: A Low Frequency Survey of Giant Pulses from the Crab Pulsar | |
| • Advisor: Greg Taylor, Ph.D. | |

RESEARCH EXPERIENCE

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| HARVARD UNIVERSITY | 2015–Present |
| Graduate Research Assistant | |
| • Supervisor: Edo Berger, Ph.D. | |
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HARVARD UNIVERSITY | 2015–2016 |
| Laboratory Assistant | |
| • Development of a Low-Noise Amplifier for the Large Aperture Experiment to Detect the Dark Ages | |
| • Supervisor: Lincoln Greenhill, Ph.D. | |
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UNIVERSITY OF NEW MEXICO | 2013–2015 |
| Undergraduate Research Assistant | |
| • Supervisor: Greg Taylor, Ph.D. | |
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NETHERLANDS INSTITUTE FOR RADIO ASTRONOMY (ASTRON) | 2014 |
| Summer Research Assistant | |
| • Heliospheric Faraday Rotation from the Crab Pulsar | |
| • Supervisor: Richard Fallows, Ph.D. | |

RELATED EMPLOYMENT

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| HARVARDX | 2017–2020 |
| Content Developer | |
| • University Chemistry: Molecular Foundations and Global Frontiers | |
| • Reclaiming Argument: An Introduction to Logical Reasoning | |
| • The FDA and Prescription Drugs: Current Controversies in Context | |
| • Science of the Physical Universe 30: Super-Earths and Life | |
| • Fundamentals of Neuroscience Part 3: The Brain | |
|
LONG WAVELENGTH ARRAY RADIO TELESCOPE | 2013–2015 |
| Telescope Operator | |

TEACHING

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

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)

VLA: 49.1 hr; ALMA: 39 hr; VLBA: 3 hr; Arecibo: 15 hr; Chandra: 135 ks; SMA: 3 tracks

1. VLA Observations as a Probe of Mass Loss from the Progenitors of Luminous IIIn SN 7.5 hours; Very Large Array, C-Priority; ID: 21A-183	2020
2. Constraining the Origin of the First Radio Source Associated with an SLSN 4.5 hours; Very Large Array, C-Priority; ID: 21A-320	2020
3. Potential Analogs of the First Repeating Fast Radio Burst 5.1 hours; Very Large Array, C-Priority; ID: 20B-228	2020
4. Testing the Connection Between Fast Radio Bursts and SLSNe with ALMA 9 hours; ALMA, C-Priority; ID: 2019.1.01663.S	2019
5. The First Radio Source Associated with a SLSN: Constraining the SED 6.75 hours; Very Large Array, A-Priority; ID: 19B-252	2019
6. The First Radio Source Associated with a SLSN: Resolving the Emission 3 hours; Very Long Baseline Array, B-Priority; ID: 19B-248	2019
7. ALMA Follow-Up of NS-NS/NS-BH mergers from LIGO/Virgo Observing Run 3 15 hours; ALMA, A-Priority; ID: 2019.1.01513.T	2019
8. Testing the Origin of the First Radio Source Associated with a SLSN Using Chandra 30 ks; Chandra + 3.75 hours joint VLA, ID: 21500179	2019
9. A Search for Fast Radio Bursts from the Superluminous Supernova PTF10hgi 15 hours; Arecibo, ID: A3331	2019
10. Testing the Connection Between Fast Radio Bursts and Superluminous Supernovae 11 hours; Very Large Array, B-Priority; ID: 19A-295	2019
11. Exploring Relativistic Transients with the SMA 3 tracks; Submillimeter Array, ID: 2019B-S019	2019
12. A Joint Radio-Optical Search for the Host Galaxies of FRBs 4 hours; Very Large Array DDT, B- and C-Priority; ID: 18B-366	2018

13. ALMA Follow-Up of NS-NS/NS-BH mergers from LIGO/Virgo Observing Run 3 2018
15 hours, ALMA, A-Priority, ID: 2018.1.01617.T
14. Late-time X-ray and Radio Observations of the Unique Relativistic TDE Sw 1644+57 2017
50 ks; Chandra + 3 hours VLA; ID: 19700497
15. Late-time Radio and X-ray Monitoring of the Relativistic TDE Sw 1644+57 2017
3 hours; Very Large Array + 55 ks joint Chandra, A-Priority; ID: 17B-198

PROFESSIONAL SERVICE

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

PROFESSIONAL DEVELOPMENT

GROWTH Astronomy School: Follow up of transients in the era of multi-messenger astronomy	2019
ICRAR/CASS Radio School	2019
Jerusalem Winter School in Theoretical Physics, The Physics of Astronomical Transients	2018
La Serena School of Data Science: Applied Tools for Data Driven Sciences	2017
NRAO Synthesis Imaging Workshop	2014, 2016

OUTREACH

SEMINAR COORDINATOR, BEACON HILL SEMINARS	2018–2020
<ul style="list-style-type: none"> Designed and coordinated the first astronomy course, <i>Unveiling the Cosmos</i>, for the Beacon Hill Seminars, a community-based program for lifelong learning 	
LOCAL ORGANIZING COMMITTEE, COMSCI CON	2018
<ul style="list-style-type: none"> Reviewed applications for ComSciCon, a workshop on science communication for graduate students, by graduate students Organized the catering and food for 80 attendees for 3 days 	
VOLUNTEER, CAMBRIDGE EXPLORES THE UNIVERSE	2018
<ul style="list-style-type: none"> Led demonstrations at the Chandra booth at yearly astronomy event for the public 	
SPEAKER CHAIR AND BLOG WRITER, HARVARD SCIENCE IN THE NEWS	2016–2019
<ul style="list-style-type: none"> Selected and organized speakers for DayCon2017: Planet Earth, a free science conference for the public Wrote monthly short-form articles on popular science aimed at bridging the communication gap between scientists and non-scientists 	
MENTOR, SCIENCE CLUB FOR GIRLS	2016–2017
<ul style="list-style-type: none"> Developed and taught several mini-lectures on computers and programming as part of <i>Wearable Tech Week</i> Helped local high school girls develop their own hands-on educational activities for elementary students 	

- Served as mentor for *Tech Team*, where girls developed an app aimed at solving one of the United Nations' Sustainable Development Goals

DIGITAL MENTOR, YOUTHASTRONET

2016–2017

- Supervised young middle school students nationwide as they collected and analyzed astronomical data using the MicroObservatory Robotic Telescope Network
- Answered students' astronomy questions on an online forum

TELESCOPE OPERATOR, UNIVERSITY OF NEW MEXICO

2013–2015

- Led weekly observatory nights for the public

TECHNICAL SKILLS

Computer Languages

PYTHON, L^AT_EX, HTML, CSS, MATLAB, Mathematica

Astronomical Software

CASA, CIAO, XSPEC, DS9, Genesys RF & Microwave Design

INVITED TALKS AND CONFERENCE CONTRIBUTIONS

1. Unveiling the Progenitors of Superluminous Supernovae with Radio and Millimeter Observations (**Invited**) 2020
Narayan Group Meeting, Center for Astrophysics | Harvard and Smithsonian
2. Unveiling the Progenitors of Superluminous Supernovae with Radio and Millimeter Observations (*Talk*) 2020
TUNA Talk, National Radio Astronomy Observatory
3. Late-time Radio Observations of Superluminous Supernovae: Implications for Central Engines and Fast Radio Bursts (*Talk*) 2020
Compact Objects Group Meeting, Flatiron Center for Computational Astrophysics
4. Late-time Radio and Millimeter Observations of Superluminous Supernovae and Long Gamma-ray Bursts (*Poster*) 2020
Royal Astronomical Society Early Career Poster Exhibition
5. Millimeter Transients with CMB-S4 (*Talk*) 2020
CMB-S4 Spring 2020 Collaboration Meeting, Lawrence Berkeley National Laboratory
6. An Overview of FRB Environments (**Invited**) 2020
The Astrophysics of Fast Radio Bursts, Flatiron Institute
7. Localizing Fast Radio Bursts and Their Host Galaxies (**Invited**) 2019
Toronto FRB Day, CITA/Dunlap Institute
8. A Radio Source Coincident with a Superluminous Supernovae (**Invited**) 2019
Institute for Theory and Computation Luncheon, Harvard University
9. Millimeter Transients in the Era of CMB Surveys (*Talk*) 2019
Astrophysics with the CMB-S4 Survey, University of Chicago
10. A Radio Source Coincident with the Superluminous Supernova PTF10hgi (**Invited**) 2019
Columbia University, Department of Astronomy Pizza Lunch
11. Identifying the Host Galaxies of Fast Radio Bursts (**Invited**) 2019
FRBs and their Possible Neutron Star Origins, Amsterdam
12. Tidal Disruption Events and Fast Radio Burst (*Talk*) 2018
Transients Group Meeting, CIERA Northwestern University
13. Uncovering the Mystery of Fast Radio Bursts (*Talk*) 2018
New Hampshire Astronomical Society

14. Radio Monitoring of the Tidal Disruption Event Swift J1644+57 (*Poster*) 2018
Jerusalem Winter School in Theoretical Physics, The Physics of Astronomical Transients
15. On the Association of Fast Radio Bursts and Their Hosts (*Talk*) 2017
Workshop on Fast Radio Bursts, McGill University
16. Multi-wavelength Monitoring of the Relativistic TDE Swift J1644+57 (*Poster*) 2017
American Astronomical Society 229th Meeting
17. Tidal Disruption Events: A Multi-Wavelength Approach (*Talk*) 2016
Time-Domain Astrophysics in the American Northeast
18. A Low Frequency Survey of Giant Pulses from the Crab Pulsar (*Poster*) 2015
American Astronomical Society 225th Meeting 2015

FIRST AUTHOR PUBLICATIONS

1. *Late-time Radio and Millimeter Observations of Superluminous Supernovae and Long Gamma-Ray Bursts: Implications for Obscured Star Formation, Central Engines, and Fast Radio Bursts*
T. Eftekhari, B. Margalit, C. M. B. Omand, et al.
2020, Submitted to ApJ, pp. 28 ([arXiv: 2010.06612](#))
2. *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
2020, Astrophysical Journal, 895, 98, pp. 10 ([arXiv:2001.02688](#))
3. *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.
2019, Astrophysical Journal Letters, 876, L10, pp. 10 ([arXiv:1901.10479](#))
4. *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
2018, Astrophysical Journal, 860, 73, pp. 9 ([arXiv:1802.09525](#))
5. *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.
2018, Astrophysical Journal, 854, 86, pp. 12 ([arXiv:1710.07289](#))
6. *Associating Fast Radio Bursts with Their Host Galaxies*
T. Eftekhari & E. Berger
2017, Astrophysical Journal, 849, 162, pp. 7 ([arxiv: 1705.02998](#))
7. *A Low Frequency Survey of Giant Pulses from the Crab Pulsar*
T. Eftekhari, K. Stovall, J. Dowell, F. K. Schinzel, G. B. Taylor
2016, Astrophysical Journal, 829, 62, pp. 8 ([arxiv:1607.08612](#))

PUBLICATIONS AS NTH AUTHOR

1. *Radio Monitoring of the Tidal Disruption Event Swift J164449.3+573451. IV. The Slow Fade*
Y. Cendes, **T. Eftekhari**, E. Berger, E. Polisensky et al., 2020, *Submitted to ApJ*
2. *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*

3. *The Tidal Disruption Event AT 2018hyz II: Light-curve modelling of a partially disrupted star*
S. Gomez, M. Nicholl, P. Short, R. Margutti, K. D. Alexander, P. K. Blanchard, E. Berger, **T. Eftekhari**, et al., 2020, MNRAS, 497, 1952
4. *AT 2018cow VLBI: No Long-Lived Relativistic Outflow*
M. F. Bietenholz, R. Margutti, D. Coppejans, K. D. Alexander, M. Argo, N. Bartel, **T. Eftekhari**, D. Milisavljevic, G. Terreran, E. Berger, 2020, MNRAS, 491, 4735
5. *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
6. *A Galaxy-Targeted Search for the Optical Counterpart of the Candidate NS-BH Merger S190814bv with Magellan*
S. Gomez, G. Hosseinzadeh, P. S. Cowperthwaite, V. A. Villar, E. Berger, T. Gardner, K. D. Alexander, P. K. Blanchard, R. Chornock, M. R. Drout, **T. Eftekhari**, et al. 2019, ApJ, 884, L55
7. *The Optical Afterglow of GW170817: An Off-axis Structured Jet and Deep Constraints on a Globular Cluster Origin*
W. Fong, P. K. Blanchard, K. D. Alexander, J. Strader, R. Margutti, A. Hajela, V. A. Villar, Y. Wu, C. S. Ye, E. Berger, R. Chornock, D. Coppejans, P. S. Cowperthwaite, **T. Eftekhari**, et al. 2019, ApJL, 883, L1
8. *Follow-up of the Neutron Star Bearing Gravitational Wave Candidate Events S190425z and S190426c with MMT and SOAR*
G. Hosseinzadeh et al., 2019, ApJL, 880, L4
9. *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
10. *Unveiling the Engines of Fast Radio Bursts, Super-Luminous Supernovae, and Gamma-Ray Bursts*
B. Margalit et al., 2018, MNRAS, 481, 2407
11. *Spitzer Space Telescope Infrared Observations of the Binary Neutron Star Merger GW170817*
V. A. Villar, P. S. Cowperthwaite, E. Berger, P. K. Blanchard, S. Gomez, K. D. Alexander, R. Margutti, R. Chornock, **T. Eftekhari** G. G. Fazio, J. Guillochon, J. L. Hora, M. Nicholl, P. K. G. Williams, 2018, ApJL, 862, L11
12. *A Decline in the X-ray through Radio Emission from GW170817 Continues to Support an Off-Axis Structured Jet*
K. D. Alexander, R. Margutti, P. K. Blanchard, W. Fong, E. Berger, A. Hajela, **T. Eftekhari**, et al., 2018, ApJL, 863, 18L
13. *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
14. *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
15. *Design and characterization of the Large-Aperture Experiment to Detect the Dark Age (LEDA) radiometer systems* D. Price et al., 2018, MNRAS, 478, 4193
16. *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
17. *A gravitational-wave standard siren measurement of the Hubble constant*
B. P. Abbott et al., 2017, Nature, 551, 85
 18. *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
 19. *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
 20. *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
 21. *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
 22. *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
 23. *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
 24. *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
 25. *Bifrost: a Python/C++ Framework for High-Throughput Stream Processing in Astronomy*
M. D. Cranmer, B. R. Barsdell, D. C. Price, J. Dowell, H. Garsden, V. Dike, **T. Eftekhari**, et al., 2017, JAI, 6, 1750007
 26. *Empirical constraints on the origin of fast radio bursts: volumetric rates and host galaxy demographics as a test of millisecond magnetar connection*
M. Nicholl, P. K. G. Williams, E. Berger, V. A. Villar, K. D. Alexander, **T. Eftekhari**, B. D. Metzger, 2017, ApJ, 843, 84
 27. *Bayesian Constraints on the Global 21-cm Signal from the Cosmic Dawn*
G. Bernardi, J. T. L. Zwart, D. Price, L. J. Greenhill, A. Mesinger, J. Dowell, **T. Eftekhari**, S. W. Ellingson, J. Kocz, F. Schinzel, 2016, MNRAS, 461, 3
 28. *Digital Signal Processing using Stream High Performance Computing: A 512-input Broadband Correlator for Radio Astronomy*
J. Kocz, L. J. Greenhill, B. R. Barsdell, D. Price, G. Bernardi, S. Bourke, M. A. Clark, J. Craig, M. Dexter, J. Dowell, **T. Eftekhari**, et al., JAI, 2015, 4 50003
 29. *Pulsar Observations Using the First Station of the Long Wavelength Array and the LWA Pulsar Data Archive*
K. Stovall, P. S. Ray, J. Blythe, J. Dowell, **T. Eftekhari**, A. Garcia, A.; T. J. W. Lazio, M. McCrackan, F. K. Schinzel, G. B. Taylor, ApJ, 2015, 808, 156