

Tri Nguyen

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Education

Massachusetts Institute of Technology

Ph.D. in Physics, Astrophysics Division

Cambridge, MA

Jun 2019 – Present

University of Rochester

B.S. in Physics & Astronomy

Rochester, NY

Class of 2019

- Major GPA: 3.98/4.00
- Magna Cum Laude with highest distinction

Honors and Awards

LIGO SURF Fellowship, *California Institute of Technology*

2018

Dean's List Recognition, *University of Rochester*

2015-2019

Rush Rhees Scholarship, *University of Rochester*

2015-2019

Research Experience

MIT Local Universe Group

Aug 2021 – Present

Research Advisor: Lina Necib

- Reconstructing the dark matter density profiles of dwarf galaxies from their stellar kinematics with Graph Convolutional Neural Networks and Normalizing Flows
- Estimating the mass and accretion redshift of satellite galaxies that are accreted into the Milky Way with neural networks and the Illustris-TNG and FIRE simulations
- Constructing the Ananke DR3 mock stellar catalog using the stellar isochrone, dust extinction model, error model, and selection function consistent with the Gaia DR3 survey

MIT LIGO Laboratory

Jun 2019 – Dec 2021

Research Advisor: Erik Katsavounidis, Philip Harris

- Developed a machine learning framework for non-linear noise subtraction using auxiliary channels in gravitational-wave detectors at LIGO
- Developed a real-time gravitational-wave data analysis pipeline using an Inference-as-a-Service model by the NVIDIA Triton Server
- Estimated the sensitivity of LIGO to compact binary mergers during the LIGO Third Observing Run

Publications

List in decreasing order of contributions

T. Nguyen, S. Mishra-Sharma, L. Necib

In progress

Uncovering the dark matter density profiles of dwarf galaxies with graph neural networks

R. Ormiston, **T. Nguyen**, M. Coughlin, R. Adhikari, E. Katsavounidis

Phys.Rev.Res. **2** 033066

Noise reduction in gravitational-wave data via deep learning

arXiv:2005.06534

A. Gunny, D. Rankin, J. Krupa, M. Saleem, T. Nguyen , M. Coughlin, P. Harris, E. Katsavounidis, S. Timm, B. Holzman <i>Hardware-accelerated Inference for Real-Time Gravitational-Wave Astronomy</i>	<i>Nat Astron</i> 6, 529–536 arXiv:2108.12430
The LIGO-Virgo-KAGRA collaboration (including T. Nguyen) GWTC-3: Compact Binary Coalescences Observed by LIGO and Virgo During the Second Part of the Third Observing Run	<i>Phys.Rev.X</i> (Submitted) arXiv:2111.03606
A. Deiana et al (including T. Nguyen) <i>Applications and Techniques for Fast Machine Learning in Science</i>	<i>Front. Big Data</i> 2022.787421 arXiv:2110.13041
E. Cuoco et al (including T. Nguyen) <i>Enhancing Gravitational-Wave Science with Machine Learning</i>	<i>Mach. Learn.:Sci.Technol.</i> 2 011002 arXiv:2005.03745
S. BenZvi, R. Cross, T. Nguyen <i>Estimating the Sensitivity of IceCube to Signatures of Axion Production in a Galactic Supernova</i>	<i>International Cosmic Ray Conference</i> 2017 arXiv:1710.01201

Talks

Uncovering the dark matter density profiles in dwarf galaxies with neural networks <i>ML4Astro Workshop, ICML2022, Baltimore, MD, USA</i>	Jul 2022
Uncovering the dark matter density profiles in dwarf galaxies with neural networks <i>IAIFI-AIMLAC Lightning Talk, MIT, Cambridge, MA, USA</i>	Mar 2022
GWTC-3: Compact Binary Coalescences Observed During the Second Part of the Third Observing Run <i>LIGO-Virgo-KAGRA Public Webinar, Panelist</i>	Dec 2021
Deep Cleaning for Gravitational Wave Data <i>Fast Machine Learning Workshop, Fermilab, Batavia, IL, USA</i>	Sep 2019
Nonlinear noise regression with machine learning at LIGO <i>233rd AAS Meeting, Seattle, WA, USA</i>	Jan 2019

Service

Referee for PRD, ASCOM

Teaching Experience

Massachusetts Institute of Technology

- 8.022 Physics II, *Spring 2022*
- 8.01L Physics I, *Fall 2021*
- 8.S50 Computational Data Science in Physics, *Jan 2020, Jan 2021*

University of Rochester

- PHY 235 Classical Mechanics, *Fall 2018*
- PHY 121 Mechanics Lab, *Spring 2018, Spring 2017*
- AST 111 The Solar System & Its Origin, *Fall 2017*
- PHY 113 Mechanics Lab, *Fall 2016*