

# JORGE TORRES

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Yale University  
Wright Lab  
272 Whitney Ave, Room 254  
New Haven, CT 06511, USA

**Email:** [jorge.torreespinosa@yale.edu](mailto:jorge.torreespinosa@yale.edu)  
**Website:** <https://toej93.github.io/>  
**ORCID:** 0000-0003-4385-6127

## EDUCATION

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| <b>The Ohio State University</b> , Columbus, Ohio USA  | May 2021    |
| Ph.D. in Physics–Advisor: Prof. Amy Connolly           |             |
| Master of Science in Physics, July 2017                |             |
| <b>Universidad de Colima</b> , Colima, Mexico.         | August 2015 |
| Bachelor of Science in Physics–Advisor: Alfredo Aranda |             |

## CURRENT POSITION

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<b>Yale University</b> , New Haven, Connecticut USA	<b>July 2021 –</b>
<i>Postdoctoral Researcher</i> , Neutrinoless double beta decay (CUORE/CUPID experiments) in Karsten Heeger’s/Reina Maruyama’s Lab.	

## PREVIOUS POSITIONS

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<b>The Ohio State University</b> , Columbus, OH, USA	<b>Fall 2015 – June 2021</b>
<i>PhD Student</i> , Ultra-High Energy Neutrino Astrophysics (Askaryan Radio Array, T-576 experiment)	

## SELECTED PUBLICATIONS

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7. “Performance of a SiPM-based, plastic scintillator muon veto prototype for CUPID”  
M.Moore, S. Pagan, E. Pottebaum, J. Torres *et. al.*  
[arXiv:2505.06129] (submitted to JINST).
6. “With or without  $\nu$ ? Hunting for the seed of the matter-antimatter asymmetry”  
CUORE Collaboration  
[arXiv:2404.04453].
5. “Snowmass Early Career”  
Snowmass Early Career (SEC) organization  
[arXiv:2210.12004].
4. “Constraints on the Diffuse Flux of Ultra-High Energy Neutrinos from Four Years of Askaryan Radio Array Data in Two Stations”  
P. Allison *et. al.* (**co-author**)  
Phys. Rev. D 102, 043021 (2020) [arXiv:1912.00987].
3. “Observation of Radar Echoes From High-Energy Particle Cascades”  
S. Prohira *et. al.* (incl. **J. A. Torres**)  
Phys Rev Lett. 2020 Mar 6;124(9):091101. [arXiv:1910.12830].
2. “NuRadioMC: Simulating the radio emission of neutrinos from interaction to detector”  
C. Glaser *et. al.* (incl. **J. A. Torres**)  
Eur.Phys.J. C80 (2020) no.2, 77. [arXiv:1906.01670].
1. “Suggestion of Coherent Radio Reflections from an Electron-Beam Induced Particle Cascade”  
S.Prohira *et. al.* (incl. **J. A. Torres**)  
Phys. Rev. D 100, 072003 (2019). [arXiv:1810.09914].

## INVITED TALKS

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11. Invited talk, HEP-ex seminar  
Johns Hopkins University, Baltimore, US. 2025/04/16  
*Searching for  $0\nu\beta\beta$  decay with CUORE and CUPID...and beyond.*
10. Invited talk, Physics and Math Colloquium  
Universidad de Colima, Mexico (remote). 2024/10/12  
*Towards the discovery of matter creation with the CUORE and CUPID experiments.*
9. Invited talk, HEP seminar  
University of Maryland, College Park, US. 2024/10/06  
*CUORE's latest results*
8. Invited talk, 2024 Lake Louise Winter Institute  
Banff, Alberta, Canada. 2024/02/22  
*Searching for  $0\nu\beta\beta$  decay with CUPID*
7. Invited talk, 6th Joint Meeting of the APS Division of Nuclear Physics and the Physical Society of Japan  
Big Island, HI. 2023/12/01  
*Searching for  $0\nu\beta\beta$  decay with CUORE and CUPID*
6. Invited talk, HEP Seminar  
Michigan State University, East Lansing, MI. 2022/11/08  
*Searching for  $0\nu\beta\beta$  decay with CUORE... and beyond*
5. Invited talk, Seminario de Altas Energías  
UNAM, Mexico. 2022/05/25  
*Searching for  $0\nu\beta\beta$  decay with CUORE*
4. Invited talk, GAE (Grupo de Altas Energías) Seminar  
CINVESTAV, Mexico. 2022/02/25  
*Searching for  $0\nu\beta\beta$  decay with CUORE*
3. Invited talk, Wright Lab WIDG Seminar  
Wright Lab, Yale Physics Dept, New Haven CT, USA. 2021/10/26  
*Tuning into neutrinos on the radio with the ARA experiment*
2. Invited plenary talk, XIX Mexican School of Particles and Fields  
Held remotely due to COVID-19 2021/08/10  
*Tuning into neutrinos on the radio*
1. Invited talk, UMASS Dartmouth Physics Department Colloquium  
Held remotely due to Covid-19 pandemic. 2020/10/15  
*Tuning into neutrinos on the radio*

## CONTRIBUTED TALKS AND POSTERS

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14. Poster, XXXI International Conference on Neutrino Physics and Astrophysics.  
Milan, Italy. 2024/06/18  
*Reconstruction of muon events with CUORE.*
13. Contributed talk, APS DNP Fall Meeting, New Orleans LA. 2022/10/28  
*CUPID: a next-generation  $0\nu\beta\beta$  decay experiment*
12. Poster, Seattle Snowmass Summer Meeting, Seattle WA. 2022/07/19  
*CUPID: a next-generation  $0\nu\beta\beta$  decay experiment*
11. Poster, Neutrino 2022, Seoul, Korea (Virtual). 2022/05/30  
*Mitigation of cosmic muon backgrounds for CUPID*
10. Contributed talk, APS April Meeting, New York, NY. 2022/04/11  
*Design of a muon-veto system for the CUPID experiment*

9. Contributed talk, APS April Meeting, held remotely due to COVID-19  
*Reconstruction of UHE neutrinos with the Askaryan Radio Array (ARA) experiment* 2021/04/19
8. Poster, Cosmic Rays and Neutrinos in the Multi-Messenger Era  
Held remotely due to Covid-19 pandemic.  
*Recent results from the Askaryan Radio Array (ARA) experiment* 2020/12/07
7. Contributed talk, 2020 Graduate Student Summer Seminar Series, Columbus OH. 2020/06/30  
*Ultra-High Energy Neutrinos: Physics, detection, and recent results from the Askaryan Radio Array (ARA) experiment*
6. Contributed talk, APS April Meeting, held remotely due to COVID-19 2020/04/19  
*Recent results from the Askaryan Radio Array (ARA) experiment*
5. Contributed talk, Graduate Student Summer Seminar Series, Columbus OH. 2019/07/17  
*Ultra-High Energy Neutrinos: Physics and Detection*
4. Contributed talk, Radio-Workshop, DESY (Zeuthen), Germany. 2019/06/19  
*Validation of in-ice simulations*
3. Contributed talk, APS April Meeting, Denver CO. 2019/04/15  
*Simulations of radio-based Ultra-High Energy (UHE) in-ice neutrino experiments*
2. Contributed talk, Ohio Supercomputer Center Statewide Users Group Conference, Columbus, OH. 2018/04/05  
*The role of HPC in the radio-detection of astrophysical neutrinos*
1. Contributed talk, Computing in High Energy Astropart. Phys. Research 2016, Columbus OH. 2016/05/26  
*The BuckArray: detecting cosmic rays with cellphones*

## OUTREACH TALKS

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10. Pint of Postdoc, by the Yale Postdoctoral Association  
New Haven CT, USA. 2023/05/31  
*Neutrinos: the ghost-like particles*
9. Union County Magnet High School  
NJ, USA. 2023/05/05  
*Neutrinos: the ghost-like particles*
8. Instituto Heisenberg  
Universidad de Colima, Colima, Mexico. 2023/04/01  
*Neutrinos: las partículas cuasi-fantasmas*
7. Snowmass Summer Study Physics Slam [**winner**]  
University of Washington, Seattle, WA. 2022/07/21  
*Neutrinos: the ghost-like particles*
6. Girls Advancing in STEM (GAINS) Conference  
Yale University, New Haven, CT. 2022/04/08  
*Neutrinos: the ghost-like particles*
5. Yale Science in the News talk (series: Hidden things)  
Brookfield Library, Connecticut, USA. 2022/02/24  
 *$\nu$ 's from outer space, observing the Universe with neutrinos*
4. Yale Science in the News talk (series: Hidden things)  
SSILL, Connecticut, USA. 2022/02/23  
 *$\nu$ 's from outer space, observing the Universe with neutrinos*
3. Yale Science in the News talk (series: Hidden things)  
New Canaan Library, Connecticut, USA. 2022/02/17  
 *$\nu$ 's from outer space, observing the Universe with neutrinos*

2. Yale Science in the News talk (series: Hidden things)  
Brooklyn Public Library, New York, USA. 2022/02/15  
 *$\nu$ 's from outer space, observing the Universe with neutrinos*
1. Talk (high school students), Instituto Heisenberg  
Universidad de Colima, Colima, Mexico . 2019/05/19  
*Stories from a physics PhD student in the US*

## RELEVANT SKILLS

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Programming/Software Languages	C++, C, Python, BASH, L <sup>A</sup> T <sub>E</sub> X, Git, Geant4, ROOT Spanish (Native), English (Full professional proficiency)
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## AWARDS

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- Winner of the Snowmass Summer Study Physics Slam 07/2022
- Selected poster at the Hayes Research Forum 02/2020  
*My abstract was selected among two hundred other abstracts to participate in the research forum and present a poster on my work.*
- APS Division of Astrophysics Travel Grant to attend the APS April Meeting 04/2019  
*My abstract was selected, and I was awarded \$600 (USD) to cover travel expenses for the APS April Meeting.*
- Ohio SuperComputer Center Statewide Users Group Conference Talk Award 10/2017  
*I received this award for getting second place in their 5-minute talk competition.*

## TEACHING

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Teaching Assistant, “Physics 1201:E&M, Optics and Quantum Mechanics”, OSU	Spring 2018–Summer 2018
Teaching Assistant, “Physics 1250: Mech, Thermo, Waves”, OSU	Fall 2015–Spring 2017

## OUTREACH AND SERVICE

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Panelist at “Science communication for busy scientists” at the 2025 SACNAS New England Chapter Community Gathering	April 12, 2025
Yale Nuclear, Particle and Astrophysics (NPA) seminar coordinator	Aug 2024 – Jan 2025
Panelist at “How to prepare for scientific conferences” workshop at Wright Lab	July 10, 2024
Organizer of New Haven Pint of Science	May 13-15, 2024
Volunteer for the 2024 Yale Physics Olympics	March 30, 2024
Member of Postdoctoral Advisory Committee at Yale’s Physics Department	Nov, 2023 –
Panelist at “How to prepare for scientific conferences” workshop at Wright Lab	July 18, 2023
Executive member of the 2023 Yale Physics Olympics	April, 2023
Mentor at the APS DNP Conference Experience for Undergraduates	October, 2022
Postdoc representative for the Yale Physics Club Committee	October, 2022 – October 2023
Yale Science In The News (SITN) Director	September, 2022 – August, 2023
Project lead for Yale Pathways to Science	July 13th, 2022
Speaker at Girls Advancing in STEM (GAINS) Conference	April 8th, 2022
Organizer of “Big Questions in Particle Physics” Snowmass Colloquia	October 2021 – June 2022
Member of the Snowmass Early Career Core Initiatives Leadership	September 2021 – August 2022
Creator and organizer of the <i>Elusives Journal Club</i> at Yale Wright Lab	August 2021 – January 2023
Delegate, Council of Graduate Students (CGS), OSU	August 2019–August 2020
Volunteer for “Friends of Ohio State Astronomy and Astrophysics” (FOSAA) event	October 2019
Volunteer for Breakfast of Science Champions, OSU	November 2019
Volunteer Poster Judge, Ohio Supercomputer Center	April 2018–August 2020
Counsel member for the Society for Women in Physics (SWiP), OSU	August 2017–December 2018
Coordinator for ASPIRE Workshop for High School Girls, OSU	July 2017–July 2020

## MENTORSHIP

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### At Yale:

**Graduate Students:** Ridge Liu, Maya Moore, Samantha Pagan, Iris Ponce, Emily Pottebaum, Ruoxi Wang (student at Johns Hopkins University).

**Undergraduate Students:** Iffat Zarif, Aaron Chizhik, Din-Ammar Tolj, Andrew Hutchison (student at MIT), Jackie Hua, Andrew Zheng, Reagan Garcia (summer student from CalPoly).

### At Ohio State:

**Graduate Students:** Dennis Calderon-Madera, Julie Rolla, Justin Flaherty, Dylan Frikken

**Undergraduate Students:** Ian Best, Hannah Hassan, Alex Machtay, Alex Patton

## SOFTWARE PROJECTS

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- Lobster Plot: Code to make the so-called “Lobster Plot”, developed from code that previous Yale grad. student Jeremy Cushman wrote. Website: <https://toej93.github.io/LobsterPlot/>.

## IN THE MEDIA

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- Wright Lab members host 2025 Pint of Science Festival in New Haven.
- Yale Physics postdocs host 2024 Pint of Science Festival in New Haven
- Building on luck, Symmetry Magazine
- Statewide Users Group spring conference showcases variety of research, OSC resources

## Full publication list (without proceedings)

- [0] Maya Moore et al. “Performance of a SiPM-based, plastic scintillator muon veto prototype for CUPID”. In: (May 2025). arXiv: 2505.06129 [physics.ins-det].
- [1] D. Q. Adams et al. “Data-driven background model for the CUORE experiment”. In: *Phys. Rev. D* 110.5 (2024), p. 052003. DOI: 10.1103/PhysRevD.110.052003. arXiv: 2405.17937 [nucl-ex].
- [2] D. Q. Adams et al. “Search for Fractionally Charged Particles with CUORE”. In: *Phys. Rev. Lett.* 133 (24 Dec. 2024), p. 241801. DOI: 10.1103/PhysRevLett.133.241801. URL: <https://link.aps.org/doi/10.1103/PhysRevLett.133.241801>.
- [3] CUORE Collaboration et al. *With or without  $\nu$ ? Hunting for the seed of the matter-antimatter asymmetry*. 2024. arXiv: 2404.04453 [nucl-ex]. URL: <https://arxiv.org/abs/2404.04453>.
- [4] B. Acharya et al. “Fundamental Symmetries, Neutrons, and Neutrinos (FSNN): Whitepaper for the 2023 NSAC Long Range Plan”. In: (Apr. 2023). arXiv: 2304.03451 [nucl-ex].
- [5] J. A. Aguilar et al. “Triboelectric backgrounds to radio-based polar ultra-high energy neutrino (UHEN) experiments”. In: *Astropart. Phys.* 145 (2023), p. 102790. DOI: 10.1016/j.astropartphys.2022.102790.
- [6] K. Alfonso et al. “A first test of CUPID prototypal light detectors with NTD-Ge sensors in a pulse-tube cryostat”. In: *JINST* 18.06 (2023), P06033. DOI: 10.1088/1748-0221/18/06/P06033. arXiv: 2304.04674 [physics.ins-det].
- [7] K. Alfonso et al. “Twelve-crystal prototype of  $\text{Li}_2\text{MoO}_4$  scintillating bolometers for CUPID and CROSS experiments”. In: *JINST* 18.06 (2023), P06018. DOI: 10.1088/1748-0221/18/06/P06018. arXiv: 2304.04611 [physics.ins-det].
- [8] J. A. Aguilar et al. “In situ, broadband measurement of the radio frequency attenuation length at Summit Station, Greenland”. In: (Jan. 2022). DOI: 10.1017/jog.2022.40. arXiv: 2201.07846 [astro-ph.IM].
- [9] J. A. Aguilar et al. “Reconstructing the neutrino energy for in-ice radio detectors: A study for the Radio Neutrino Observatory Greenland (RNO-G)”. In: *Eur. Phys. J. C* 82.2 (2022), p. 147. DOI: 10.1140/epjc/s10052-022-10034-4. arXiv: 2107.02604 [astro-ph.HE].
- [10] K. Alfonso et al. “Optimization of the first CUPID detector module”. In: *Eur. Phys. J. C* 82.9 (2022), p. 810. DOI: 10.1140/epjc/s10052-022-10720-3. arXiv: 2202.06279 [physics.ins-det].
- [11] P. Allison et al. “Low-threshold ultrahigh-energy neutrino search with the Askaryan Radio Array”. In: *Phys. Rev. D* 105.12 (2022), p. 122006. DOI: 10.1103/PhysRevD.105.122006. arXiv: 2202.07080 [astro-ph.HE].
- [12] Joshua Barrow et al. “Snowmass Early Career: The Key Initiatives Organization”. In: *Snowmass 2021*. July 2022. arXiv: 2207.07508 [physics.soc-ph].
- [13] J. A. Aguilar et al. “Design and Sensitivity of the Radio Neutrino Observatory in Greenland (RNO-G)”. In: *JINST* 16.03 (2021). [Erratum: *JINST* 18, E03001 (2023)], P03025. DOI: 10.1088/1748-0221/16/03/P03025. arXiv: 2010.12279 [astro-ph.IM].
- [14] J. A. Aguilar et al. “Triboelectric Backgrounds to radio-based UHE Neutrino Experiments”. In: (Mar. 2021). arXiv: 2103.06079 [astro-ph.IM].
- [15] S. Prohira et al. “Modeling in-ice radio propagation with parabolic equation methods”. In: *Phys. Rev. D* 103.10 (2021), p. 103007. DOI: 10.1103/PhysRevD.103.103007. arXiv: 2011.05997 [astro-ph.IM].
- [16] S. Prohira et al. “The Radar Echo Telescope for Cosmic Rays: Pathfinder experiment for a next-generation neutrino observatory”. In: *Phys. Rev. D* 104.10 (2021), p. 102006. DOI: 10.1103/PhysRevD.104.102006. arXiv: 2104.00459 [astro-ph.IM].
- [17] M.G. Aartsen et al. “IceCube-Gen2: The Window to the Extreme Universe”. In: (Aug. 2020). arXiv: 2008.04323 [astro-ph.HE].
- [18] P. Allison and others [co-author]. “Constraints on the diffuse flux of ultrahigh energy neutrinos from four years of Askaryan Radio Array data in two stations”. In: *Phys. Rev. D* 102.4 (2020), p. 043021. DOI: 10.1103/PhysRevD.102.043021. arXiv: 1912.00987 [astro-ph.HE].
- [19] Christian Glaser et al. “NuRadioMC: Simulating the radio emission of neutrinos from interaction to detector”. In: *Eur. Phys. J. C* 80.2 (2020), p. 77. DOI: 10.1140/epjc/s10052-020-7612-8. arXiv: 1906.01670 [astro-ph.IM].
- [20] S. Prohira et al. “Observation of Radar Echoes From High-Energy Particle Cascades”. In: *Phys. Rev. Lett.* 124.9 (2020), p. 091101. DOI: 10.1103/PhysRevLett.124.091101. arXiv: 1910.12830 [astro-ph.HE].

- [21] M. G. Aartsen et al. “Neutrino astronomy with the next generation IceCube Neutrino Observatory”. In: (Nov. 2019). arXiv: 1911.02561 [astro-ph.HE].
- [22] J.A. Aguilar et al. “The Next-Generation Radio Neutrino Observatory – Multi-Messenger Neutrino Astrophysics at Extreme Energies”. In: (July 2019). arXiv: 1907.12526 [astro-ph.HE].
- [23] P. Allison et al. “Long-baseline horizontal radio-frequency transmission through polar ice”. In: *arXiv e-prints*, arXiv:1908.10689 (Aug. 2019), arXiv:1908.10689. arXiv: 1908.10689 [astro-ph.IM].
- [24] S. Prohira et al. “Suggestion of Coherent Radio Reflections from an Electron-Beam Induced Particle Cascade”. In: *Phys. Rev. D* 100.7 (2019), p. 072003. DOI: 10.1103/PhysRevD.100.072003. arXiv: 1810.09914 [hep-ex].