JORGE TORRES

Name: Jorge Torres
ORCID: 0000-0003-4385-6127
Website: https://toej93.github.io/
GitHub: https://github.com/toej93

EDUCATION

The Ohio State University, Columbus, Ohio USA May 2021
Ph.D. in Physics–Advisor: Prof. Amy Connolly
Master of Science in Physics, July 2017

Universidad de Colima, Colima, Mexico. August 2015
Bachelor of Science in Physics–Advisor: Alfredo Aranda

CURRENT POSITION

Yale University, New Haven, Connecticut USA **July 2021 –**
Postdoctoral Researcher, Neutrinoless double beta decay (CUORE/CUPID experiments) in Reina Maruyama's Lab.

- Leading the development of the muon-veto for CUPID at Yale's Wright Lab.
- Currently working on exotic track-like searches with CUORE data.
- Member of CUORE's Publication Board.
- Member of CUPID's communication tools task force.

PREVIOUS POSITIONS

The Ohio State University, Columbus, OH USA **Fall 2015 – May 2021**
Research Assistant, Ultra-High Energy Neutrino Astrophysics (Askaryan Radio Array, T-576 experiment)

- Developer of the simulation framework for the Askaryan Radio Array (ARA) collaboration.
- ARA data analysis: contributed to the diffuse search for ultra-high energy neutrinos in four years of data for ARA stations 2 and 3 (published on Phys. Rev. D). Currently leading the efforts on a point source search of ultra-high energy neutrinos using the same dataset as in the diffuse analysis (to be published).
- Actively participated in the construction and realization of the experiment T-576 to detect radio-frequency waves bouncing off particle showers. The experiment was carried out at SLAC National Accelerator Laboratory. This led to two publications in two peer-reviewed journals: Phys. Rev. Letters and Phys. Rev. D.
- Member of the InIceMC simulation group, aimed at improving simulations of radio-based UHE in-ice neutrino experiments.
- ARA operations manager, along with another graduate student. We organize the monitoring schedule for the stations, lead operations calls, help fix issues with the stations when they arise, among other tasks.
- ARA weekly analysis calls organizer and moderator.
- Lead in the simulation-comparison efforts, along with another graduate student. We are in charge of comparing AraSim, the simulation framework used by the ARA collaboration, to other simulations, as well as improving it, and fixing any bugs.
- Mentoring of young graduate students in the group.

SELECTED PUBLICATIONS

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

5. Invited talk, Altas Energías Seminar
   UNAM, Mexico. 2022/05/25
   Searching for $0\nu\beta\beta$ decay with CUORE

4. Invited talk, GAE 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 Colloquia
   Held remotely due to Covid-19 pandemic. 2020/10/15
   Tuning into neutrinos on the radio

CONTRIBUTED TALKS AND POSTERS

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 2021/04/19
   Reconstruction of UHE neutrinos with the Askaryan Radio Array (ARA) experiment

8. Poster, Cosmic Rays and Neutrinos in the Multi-Messenger Era
   Held remotely due to Covid-19 pandemic. 2020/12/07
   Recent results from the Askaryan Radio Array (ARA) experiment

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

7. Snowmass Summer Study Physics Slam
   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
   ν'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
   ν'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
   ν'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
   ν'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 PhD student in the US

RELEVANT SKILLS

Programming/Software	C++, C, Python, BASH, LaTeX, Git, Data science (certificate)
Languages	Spanish (native), English (Full professional proficiency)

AWARDS

- 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

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

Project lead for Yale Pathways to Science July 13th, 2022
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 –
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

At Yale:

Graduate Students: Samantha Pagan, Iris Ponce

At Ohio State:

Undergraduate Students: Ian Best, Hannah Hassan, Alex Machtay, Alex Patton
Graduate Students: Dennis Calderon-Madera, Julie Rolla, Justin Flaherty, Dylan Frikken

SOFTWARE PROJECTS

- Lobster Plot: Code to make the famous "Lobster Plot", developed from code that previous Yale grad. student Jeremy Cushman wrote. Website: `https://toej93.github.io/LobsterPlot/`.