JORGE TORRES

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Date of Birth: 15/12/1993
Family status: Single, no children
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GitHub: `https://github.com/toej93`

EDUCATION

The Ohio State University, Columbus, Ohio USA 18/08/2015–11/05/2021 (Expected)

Ph.D. in Physics–Advisor: Prof. Amy Connolly
Master of Science in Physics, 12/07/2017

Universidad de Colima, Colima, Mexico. 07/08/2011–07/06/2015

Bachelor of Science in Physics–Advisor: Alfredo Aranda

CURRENT POSITION

The Ohio State University, Columbus, OH USA **18/08/2015 – present**
Ph.D. Student, Ultra-High Energy Neutrino Astrophysics

- 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.

RESPONSIBILITIES

- 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.

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], **1 citation**.
   Contributed to data analysis, writing and editing of the paper.
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 citations**
   Contributed to carrying out the experiment at SLAC.

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], **6 citations**
   Contributed the reviewing parts of the code and participating in discussions.

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], **2 citations**
   Contributed to carrying out the experiment at SLAC.

SCIENTIFIC TALKS

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

RELEVANT SKILLS

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

AWARDS

- 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

Delegate, Council of Graduate Students (CGS), OSU	August 2019–present
Talk (high school students), Instituto Heisenberg, Colima, Mexico	May 2019
Volunteer Poster Judge, Ohio Supercomputer Center	April 2018–present
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–present

MENTORSHIP

My mentoring activities consisted in answering questions, reviewing and providing feedback to their write-ups and presentations, as well as helping students with their computational codes for their projects.

Undergraduate Students:	Ian Best, Hannah Hassan
Graduate Students:	Dennis Calderon-Madera, Julie Rolla