JORGE TORRES

191 W. Woodruff Ave
Physics Research Building
The Ohio State University
Columbus, OH 43210 USA

Phone: (614) 822-7264
Email: torresespinosa.1@osu.edu
Website: `u.osu.edu/torresespinosa.1`

RESEARCH PROFILE

Experimental particle astrophysics PhD candidate at The Ohio State University working with the Askaryan Radio Array (ARA). Interested in ultra-high energy (UHE) neutrino astronomy, specifically the simulation, and data analysis of radio-based Antarctic neutrino telescopes, as well as the development of new UHE neutrino detection techniques.

EDUCATION

The Ohio State University, Columbus, Ohio USA — Fall 2015–Spring 2021 (Expected)
Ph.D. in Physics–Advisor: Prof. Amy Connolly
Master of Science in Physics, July 2017

Universidad de Colima, Colima, Mexico. — 2011–2015
Bachelor of Science in Physics–Advisor: Alfredo Aranda

AWARDS

- Ohio SuperComputer Center Statewide Users Group Conference Talk Award — 10/2017
- APS Division of Astrophysics Travel Grant to attend the APS April Meeting — 04/2019

RESEARCH EXPERIENCE

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

- Developer in the simulation and analysis efforts in Askaryan Radio Array (ARA) collaboration to detect ultra-high energy neutrinos.
- Helped 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.
- Member of the InIceMC simulation group, aimed at improving simulations of radio-based UHE in-ice neutrino experiments.

PUBLICATIONS

5. "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**)
   To be submitted to Physical Review D (2020). [arXiv:1912.00987]
4. "Observation of Radar Echoes From High-Energy Particle Cascades"
   S. Prohira *et. al.* (incl. **J. A. Torres**)
   Accepted to Physical Review Letters (2020). [arXiv:1910.12830]

3. "Long-baseline horizontal radio-frequency transmission through polar ice"
   P. Allison *et. al.* for the ARA Collaboration (incl. **J. A. Torres**)
   Submitted to Journal of Glaciology (2019). [arXiv:1908.10689]

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**)
   Accepted to to PRD (2019). [arXiv:1810.09914]

SCIENTIFIC TALKS

5. Talk, Graduate Student Summer Seminar Series, Columbus OH. 2019/07/17
   Ultra-High Energy Neutrinos: Physics and Detection

4. Talk, Radio-Workshop, DESY (Zeuthen), Germany. 2019/06/19
   Validation of in-ice simulations

3. Talk, APS April Meeting, Denver CO. 2019/04/15
   Simulations of radio-based Ultra-High Energy (UHE) in-ice neutrino experiments

2. Talk, Ohio Supercomputer Center Statewide Users Group Conference, Columbus, OH. 2018/04/05
   The role of HPC in the radiodetection of astrophysical neutrinos

1. 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

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

Undergraduate Students: Ian Best, Hannah Hassan