

JOHN HARRISON, PhD

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Department of Mathematics and Statistics
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SUMMARY

Theoretical Particle Physicist and Professor of Mathematics in the Department of Mathematics and Statistics at Texas A&M University in Corpus Christi, TX. Current research focuses primarily on neutrino transitional probabilities and abundance ratios at various distances from their source of creation while analyzing the probability of neutrino entanglement to predict flavor transformations.

EDUCATION

- BS Physics, Texas A&M University- Corpus Christi,
Department of Environmental and Physical Sciences (12/2018)
- MSc Physics, University of Texas at San Antonio,
Department of Physics and Astronomy (12/2022)
- PhD Physics, University of Texas at San Antonio, Department of Physics and
Astronomy (12/2024)
Concentration: Theoretical Particle Physics
Dissertation: *Production, flavor transformation and predicting final states of
entangled neutrinos*

RESEARCH INTERESTS

- Theoretical Particle Physics
- Neutrino Physics
- Theoretical Cosmology
- Black Holes
- Mathematical Physics
- Dark Matter
- Gravity

APPOINTMENTS AND LECTURED COURSES

- Professor of Mathematics, Department of Mathematics and Statistics, Texas A&M University-Corpus Christi (2022-present):
 - MATH 0214- Essential Support for College Algebra
 - MATH 0232- Brief Developmental Mathematics
 - MATH 1314- College Algebra
 - MATH 1324- Finite Mathematics
 - MATH 1325- Business Calculus
 - MATH 1332- Contemporary Mathematics
 - MATH 1442- Statistics for Life
 - MATH 2305- Discreet Mathematics
 - MATH 2413- Calculus I
 - MATH 2414- Calculus II

- Adjunct Professor of Physics, College of Science, University of Houston-Victoria (2018-2025):
 - PHYS 1301- Classical Mechanics
 - PHYS 1302- Electricity and Magnetism
 - PHYS 1101- Classical Mechanics Lab
 - PHYS 1102- Electricity and Magnetism Lab
- Graduate Research Teaching Assistant, Department of Physics and Astronomy, University of Texas at San Antonio (2019-2023):
 - PHY 1611- Physics I Lab
 - PHY 1631- Physics II Lab

INTERNSHIPS

- Brookhaven National Laboratory (June 2018-August 2018)
 - Department: Computational Science Initiative
 - Mentor: Line Pouchard
 - Responsibility: Build and customize a data repository with the Invenio/Zenodo platform, write Python script to upload and publish papers as well as automatically upload and categorize metadata as received from the National Synchrotron Light Source II.

PUBLICATIONS:

- Harrison J, Anantua R. High-Energy Neutrino Flavor State Transition Probabilities. Applied Sciences. 2024; 14(22):10666. <https://doi.org/10.3390/app142210666>

ACCOMPLISHMENTS

- Successfully developed a data repository as well as a Python script which allows for the upload and publishing of particle data sets. The Python script also allows for easy upload and categorization of metadata as received from various particle accelerators including the National Synchrotron Light Source II at Brookhaven National Laboratory.

POSTER PRESENTATIONS

- New York Scientific Data Summit, Upton, NY (2018) *Building and customizing a data repository with the Invenio/Zenodo platform (Harrison and Pouchard)*