Ali Garabaglu

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Research Experience

Rutgers University Department of Physics | HEX Lab | June 2016 – July 2021
Research Assistant

Worked in the group of John Paul Chou. Made significant contributions to two published LHC analyses. Also playing a leading role in the analysis, simulation, and track reconstruction of a new proposed detector, MATHUSLA.

University of Washington Department of Physics | EPE Lab | August 2021 – Present
Research Assistant

Actively working in the group on Shih-Chieh Hsu. Contribute to Alignment emulsion and tracker stations of FASER experiment. Involved in creating new tools for anomaly detection in the ATLAS experiment.

Education

Rutgers University | May 2020
New Brunswick, NJ

B.S. *magna cum laude* in Physics with *High Honors*, Minor in Mathematics
Senior Thesis: “A Study of the MATHUSLA Test Stand and Proposed Large Scale Geometries”

University of Washington | Present
Seattle, WA

Physics PhD Candidate

Publications

CMS (Author in Analysis Notes):

The CMS Collaboration. "Search for physics beyond the standard model in high-mass diphoton events from proton-proton collisions at s= 13 TeV." *Physical Review D* 98.9 (2018): 092001.

The CMS Collaboration. "Search for Pair-Produced Resonances Each Decaying into at Least Four Quarks in Proton-Proton Collisions at s= 13 TeV." *Physical review letters* 121.14 (2018): 141802.

MATHUSLA:

Alpigiani Cristiano et al., "An Update to the Letter of Intent for MATHUSLA: Search for Long-Lived Particles at the HL-LHC." *arXiv preprint arXiv:2009.01693* (2020).

Alidra, Maf, et al. "The MATHUSLA test stand." *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 985 (2021): 164661

FASER:

FASER Collaboration, “First Measurement of the nu_e and nu_mu Interaction Cross Sections at the LHC with FASER's Emulsion Detector”, *arXiv preprint arXiv:2403.12520* (2024).

Talks

- *Weakly-Supervised Anomaly Detection with Conditional VAEs*, 2023, APS, online.
- *FASER Tracking and Emulsion Station Alignment*, 2024, ACAT Conference, Stony Brook, NY.
- *Results From TeV Neutrinos at the FASER Experiment*, 2024, DPF-PHENO, Pittsburg, PA.
- *Boosted DiTau High + Low pt Reconstruction and Identification*, 2024, TauCP + HLepton Workshop, Geneva, Switzerland.
- *Probing the High-Momentum Frontier of Higgs Boson Decay to a pair of Tau Leptons*, 2024, ATLAS US Workshop, Seattle, WA.

Activities and Leadership

Rutgers Society for Physics Students | May 2017 – May 2020

New Brunswick, NJ

I was involved in SPS since my freshman year. I have contributed to setting up programs where we teach students interested in learning high energy physics computing skills.

Math Tutor | September 2016 – June 2019

Plainsboro and New Brunswick, NJ

Have tutored high school students in calculus, trigonometry, and algebra.

UW QaurkNet | April 2021

Seattle, WA

Helped organize a particle physics research demonstration for a group of diverse g talented local high school students.

Snowmass Outreach Program | July 2022

Seattle, WA

I was one of leaders in organizing and presenting in public outreach events in Seattle to promote and educate the general public about particle physics.

Awards and Scholarships

University of Washington Provost Award | 2021
Given for promising new graduate students.

Rutgers University SAS Paul Robeson Scholar | 2020
For Completion of senior thesis.

Rutgers University Robert L. Sells Scholarship | 2019 – 2020
Awarded to Rutgers physics majors who, in the judgment of the physics faculty, have demonstrated outstanding academic excellence.

Rutgers University SAS Excellence Award | 2018 – 2019
Invitation based award, for high performing students in the School of Arts and Science.

Rutgers University Jaqua Scholarship | 2016 – 2019
Highly competitive award, which is awarded based on financial needs and merit of work.