Landry Horimbere

Phone: (202) 489-2723
Email: landry.horimbere@gmail.com

Education

Ph.D. in Physical Sciences, University of Maryland, College Park, Fall 2022 (expected)

B.Sc. in Physics, University of Maryland, College Park, Dec. 2016

B.Sc. in Physical Sciences, University of Maryland, College Park, Dec. 2016.

Research Experience

Investigation linear growth of shear driven electron-ion hybrid waves
with Erik Mateo Tejero,at the United States Naval Research Laboratory, Aug. 2019 - present

Experimental Goals: Measure the temporal and spacial spectrum of the exited EIH wave and compare the to theoretical dispersion relations.
Measure the electric field threshold for the onset of EIH modes and compare it with theory.

Analytical Theory: Solved G. Ganguli's linear Taylor-Goldstein/Kelvin-Helmholtz like equation for shear driven EIH modes with some interesting piece-wise linear flow profiles to find there wave modes and dispersion relations.

Computation: I numerical integration G. Ganguli's EIH made equation and compare the results to analogous simplified analytical solutions.

Model-free Prediction of Multi-Timescale Data with Reservoir Computers
Professor Daniel Lathrop's Nonlinear Dynamics Laboratory, University of Maryland, College Park, Aug. 2018 - Aug. 2019

Results: Demonstrated a method using a palatalized recurrent neural networks, known as a reservoirs, with tuned leakage parameters for model-free prediction of data containing dynamics of widely differing timescales.

Validated method with near-earth magnetic field data collected by the GOES satellites system.

Software: Develo

Development of a pulsed power plasma system for studying magnetic reconnection
Professor Daniel Lathrop's Nonlinear Dynamics Laboratory, University of Maryland, College Park, May 2016 - August 2019

Experiment Design: Designed and built the vacuum, pulsed power and diagnostic systems for a reconnection experiment.

Achieved a 20 kA discharge with staring supply potential of 15 kV.

Hardware: Built vacuum insulation system for arc dielectric breakdown suppression in discharge chamber.

Machined and assembled adjustable, vacuum tight, high voltage electrode insulation from high strength Alumina using diamond-tipped tools.

Software: Used Autodesk Inventor to design the experiment's parts and assembly.

Superconductive Properties of Simultaneously sputtered Niobium-Titanium superconducting thin-films
Professor James Williams's Quantum Materials and Devices Laboratory, University of Maryland, College Park, 2015 - 2016

Experiment Design: Optimized the fabrication of Niobium-Titanium superconducting thin-films for use in the preparation of nanoscale devices suitable for low temperature electric transport experiments.

Hardware: Prepared high quality silicon substrates for thin film sputtering deposition.

Operated magnetron sputtering system to produce simultaneously sputtered alloy thin-films.

Software: Wrote Python control and interface programs to operate and monitor data acquisition equipment.

Wrote Python data processing programs to analyze and produce visualizations of collected data.

Talks & Posters

"Development of a Pulsed Power Plasma System for Studying Magnetic Reconnection" Talk. TREND alumni invited talk, University of Maryland, July 17th, 2019

"Development of Exploding Wire Plasma System for Studying Magnetic Reconnection" Poster. 58th Annual Meeting of the American Physical Society's Division of Plasma Physics, San Jose CA, October 2016

"Development of Exploding Wire Plasma System for Studying Magnetic Reconnection" Talk. Transportation Electrification & TREND Fair, University of Maryland, College Park MD, August 2016

"Optimization of NbTi Superconducting Thin-Films" Poster. Undergraduate Research Fair, University of Maryland, College Park MD, February 2016

Skills

Laboratory skills: plasma diagnostics, high voltage system design, pulsed power system design, vacuum system design and assembly, magnetron sputterer operation, nanoscale device substrate preparation, Physical Property Measurement System (PPMS) operation

Programming, system control and data analysis: Python, Matlab, GUI design, C#, ArcGIS, Java

Communication: technical writing, public speaking, poster and info-graphic preparation

Office skills: LaTeX, HTML, Photoshop, Microsoft Office, Linux (Ubuntu, Debian), Mac OS

CAD: Autodesk Inventor, AutoCAD, Pro/Engineer, MicroStation

Professional Development

Princeton Plasma Physics Laboratory Graduate Summer School (PPPL GSS), August 2020

Training and Research Experience in Nonlinear Dynamics (TREND), NSF REU, Jun 2016 - August 2016

Awards & Scholarships

Bridge to the Doctorate Fellow, LSAMP Bridge to the Doctorate Fellowship Program, 2017-2019

S-STEM Scholar, S-STEM Scholarship Program, University of Maryland Physics Department, 2016

Best Infographic, Open Data by Design Contest, Department of Energy, 2014

Atkins Scholarship, Atkins Scholarship Program, 2012

Teaching and Mentoring Experience

Teaching Assistant, Fundamentals of Physics I (PHYS411), Spring 2020

Teaching Assistant, General Physics Laboratory: Vibrations, Waves, Heat, E & M (PHYS261), Spring 2018

Research Mentor, Sara Negussie, Physics education and outreach, Spring 2019

Research Mentor, Francisco Matos Ortiz, LSAMP Undergraduate Research Program, Summer 2018

Teaching Assistant, Intermediate Electricity and Magnetism (PHYS411), Spring 2018

Instructor, ESTEEM/SER-Quest hands-on engineering project, Summer 2017

Professional Service and Membership

Co-organizer and graduate student life paneliat, Conference for Undergraduate Underrepresented Minorities in Physics, sponsored by NIST and UMD Department of Physics, Jan. 2021

Member, UMD Physics Climate Committee, Fall 2020 - present

Member, National Society of Black Physicists (NSBP), Nov. 2020 - present

Co-organizer and poster competition judge, Conference for Undergraduate Underrepresented Minorities in Physics, sponsored by NIST and UMD Department of Physics, Oct. 2017

Co-organizer and undergraduate research panelist, Conference for Undergraduate Underrepresented Minorities in Physics, sponsored by NIST and UMD Department of Physics, Oct. 2016

Member, American Physical Society, 2016 - present

Member, Society of Physics Students, UMD Chapter, 2015 - 2017.

Banquet chair, University of Maryland chapter of National Society of Black Engineers (NSBE), 2013

Work Experience

Faculty assistant, Institute for Research in Electronics & Applied Physics, UMCP, Jan. 2017 - August 2017

- Designed cryogenic trap for closed circuit liquid helium recycling plant.
- Redesigned helium filtration system.

Engineering intern, District Department of Transportation (DDOT), Washington DC, May 2015 - July 2015

- Redesigned Sections 200 and 600 of the DDOT Standard Drawings.
- Collaborated with the DDOT's Chief Engineer on draft revisions and approval.
- Prepared training seminars on the updated Standard Drawings.

Engineering intern, Gordon Contractors Inc., Capitol Heights MD, May 2012 - August 2014

- Prepared structural and architectural bid drawings.
- Organized and inventoried drawing library and records.

Webmaster and developer, UMD Office of Development and External Relations, Sept. 2011 - Feb. 2012

Engineering and software development intern, E-Structors Inc., Elkridge MD, May 2011 - July 2011

- Optimized the "Test and Refurbish" process and inventory database.
- Configured testing equipment and layouts.

Community Service

Treasurer and webmaster, Co-op Housing at the University of Maryland, 2014-2015

Treasurer and Burkina Faso project member, Engineers Without Borders, UMD, 2013-2014

Languages

English (native) - French (native) - Kirundi (basic)