Thomas Bsaibes

CONTACT DETAILS

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WORK EXPERIENCE

Purdue School of Science, Indianapolis IN 2016-2023

Graduate Researcher:

- Developed system to measure theorized fifth forces.
- System is sensitive to Yukawa-like interactions.
- Enhanced sensitivity over older studies by an order of magnitude.
- Mentored undergraduate researcher in instrumentation, through construction of miniature Watt-balance.

Graduate Teaching Assistant:

- Led physics recitation courses.
- Presented problems and problem solving techniques to under grad students.
- Instructed undergraduate physics lab courses.
- Set up and tested laboratory equipment before lab courses.
- Held office hours for students who needed extra help.

NHMFL, Los Alamos National Laboratory 2022

Visiting Graduate Researcher:

- Worked as a researcher under the supervision of Dr. Marcelo Jaime
- Ran magnetostriction experiments.
- Supported users during pulsed magnetic field experiments.
- Set up and started running an experiment to measure the harmonics of a aluminium rod.
- Used DMRG techniques to reproduce theoretical results.
- Designed mounting bracket to attach a camera to a spectrometer.

DePaul University, Chicago IL 2014-2016

Graduate Researcher:

- Studied conduction properties of transparent conducting oxide In-O.
- Analyzed the structure of oxides with a radial distribution function.
- Correlated the sample structure to conduction properties.

Graduate Teaching Assistant:

- Aided professors in teaching the undergraduate physics courses during lecture.
- Set up and tested laboratory equipment before lecture.
- Answered students questions during lecture.
- Held office hours for students who needed extra help.

University of Illinois at Chicago 2012-2014
Volunteer Research Assistant

- Studied surfactant organization at a liquid-liquid interface with Brewster angle microscope.
- Prepped samples, gathered data, and conducted preliminary analysis of data.
- Preformed routine maintenance.

EDUCATION

Ph.D. Physics 2016-2023
Purdue School of Science, Indianapolis IN
Thesis: Toward Setting Stronger Limits On Hypothetical Yukawa Interactions Using Cylinders

M.S. Physics 2014-2016
DePaul University
Thesis: A Study of Amorphous and Crystalline Transparent Conducting Oxides' Structures Through Radial-Distribution Functions

B.S. Physics 2010-2014
University of Illinois at Chicago

SKILLS

Hardware:	Lockin Amplifier, Position Sensitive Detectors, Capacitance Bridge, Scanning Electron Microscope (SEM), Profilometer, Brewster Angle Microscope, Raspberry Pi, Arduino
Fabrication:	Greyscale Lithography, Printed Circuit Board (PCB) Design, Milling Machine, Lathe
Software:	CNST Nanolithography Toolbox, LabVIEW, COMSOL Multiphysics, MATLAB, GSAS II, PDFGETX3, PDFGUI, Blender, FreeCAD, EasyEDA, LaTeX
Languages:	Python

CONFERENCE PRESENTATIONS

American Physics Society April Meeting 2021
Title: Macroscopic Approach for Improving Yukawa-Like Interaction Limits
Authors: **Thomas Bsaibes**, Luis Pires, Ricardo Decca

GR22/Amaldi 13 Conference 2019
Title: Setting Stronger Dark Sector Limits on Monopole-Monopole and Monopole-Dipole Interactions Using Cylinders

Authors: **Thomas Bsaibes**, Luís Pires, Aaron Mosey, Saeed Yazdani, David Czaplewski, Daniel Lopez, and Ricardo Decca

American Physics Society April Meeting 2019
Title: Improving Short Range Gravity Limits With Cylinders
Authors: **Thomas Bsaibes**, Luís Pires, David Czaplewski, Daniel Lopez, and Ricardo Decca

Indiana Academy of Science Annual Meeting 2019
Title: Improving Short Range Gravitation Limits Using Cylinders
Authors: **Thomas Bsaibes**, Luís Pires, David Czaplewski, Daniel Lopez, and Ricardo Decca

Denver X-ray Conference 2016
Title: Using Radial Distribution Function to Analyze the Structure of Indium Oxide
Authors: **Thomas Bsaibes** and G.B. Gonzalez Aviles

PUBLICATIONS

[1] **Thomas Bsaibes**, L. Pires, D. Czaplewski, D. López, and R. S. Decca, "Toward a better system for short range precision force measurements," *Modern Physics Letters A*, vol. 35, 03 2020. DOI: 10.1142/S0217732320400027.

[2] A. W. Schuman, **Thomas S. Bsaibes**, and M. L. Schlossman, "Microphase formation at a 2d solid–gas phase transition," *Soft Matter*, vol. 10, pp. 7353–7360, 37 2014. DOI: 10.1039/C4SM01197J.

AWARDS & HONORS

Awarded 2023
School of Science Outstanding Graduate Student Award

Awarded 2022
SMART Scholarship

Nomination 2021
Google PhD. Fellowship