Thomas Bsaibes

CONTACT DETAILS

Phone	(224) 422-7553
Mail	tbsaibes@iu.edu
Website	https://bsaibest.github.io/
Orcid ID	https://orcid.org/0009-0002-9247-3376

WORK EXPERIENCE

SMART Scholarship Work Commitment 2023 - 2024

Purdue School of Science, Indianapolis IN 2016 - 2023
Graduate Researcher:

- Designed micro-mechanical oscillator force sensor system.
- Developed lithographic process for manufacturing 20 μm tall fractional cylinder.
- Developed and characterized a capacitive alignment system.
- Simulated the capacitive alignment system to compare with experimental data.
- Mentored undergraduate researchers.

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.

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: Short Range Probes to Extensions of the Standard Model

M.S. Physics 2014 - 2016
DePaul University, Chicago IL
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:	Lock-in 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] **T. 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, **T. 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.

[3] **T. Bsaibes**, "Short range probes to extensions of the standard model," Ph.D. dissertation, Purdue University, 2023. DOI: 10.25394/PGS.23710635.V1.

[4] S. Yazdani, J. Phillips, A. Mosey, **T. Bsaibes**, R. Decca, and R. Cheng, "Study of the long-range exchange coupling in nd-fe-b/ti/fe multilayered structure," *Crystals*, vol. 14, no. 2, p. 119, 2024. DOI: 10.3390/cryst14020119.

[5] **T. Bsaibes** and R. Decca, "Analyzing power law extensions of newtonian gravity using differential force measurements," *Metrology*, vol. 4, no. 2, pp. 227–239, 2024, ISSN: 2673-8244. DOI: 10.3390/metrology4020014. [Online]. Available: https://www.mdpi.com/2673-8244/4/2/14.

AWARDS & HONORS

School of Science Outstanding Graduate Student Award 2023
Awarded

SMART Scholarship 2022
Awarded

Google PhD. Fellowship 2021
Nominated