CONTACT DETAILS

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WORK EXPERIENCE

National Geospatial Intelligence Agency 2023 - 2024
Geodetic Surveyor

- Clearance: Top Secret/Sensitive Compartmented Information.
- Collected geodetic and geophysical data on active DoD sites.
- Established a gravity calibration loop.
- Acted as the knowledge base for the operation of atomic gravimeters.
- Wrote a training document on the scientific principles behind absolute gravimeters.

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:

- Ran magnetostriction experiments using fiber Bragg grating.
- Samples were cryogenically cooled and pulsed with 65 T magnet.
- 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 In-O.
- Samples varied in crystallinity.
- Correlated the sample structure to electron mobility.
- Analyzed the structure using a radial distribution function.

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.

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

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

CERTIFICATIONS

Machine Learning 2024
Stanford University & DeepLearning.AI on Coursera

PUBLICATIONS AND PRESENTATIONS

T. Bsaibes, *Absolute gravimetry*, Applied Research Laboratory, 2024.

T. Bsaibes and R. Decca, "Analyzing power law extensions of newtonian gravity using differential force measurements", Metrology **4**, 227–239 (2024).

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 **14**, 119 (2024).

T. Bsaibes, "Short range probes to extensions of the standard model", PhD thesis (Purdue University, 2023).

T. Bsaibes, L. Pires, and R. S. Decca, *Macroscopic approach for improving yukawa-like interaction limits*, American Physics Society April Meeting, 2021.

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 **35**, 10.1142/S0217732320400027 (2020).

T. Bsaibes, L. Pires, A. Modey, S. Yazdani, D. Czaplewski, D. López, and R. S. Decca, *Setting stronger dark sector limits on monopole-monopole and monopole-dipole interactions using cylinders*, GR22/Amaldi 13 Conference, 2019.

T. Bsaibes, L. Pires, D. Czaplewski, D. López, and R. S. Decca, *Improving short range gravity limits with cylinders*, American Physics Society April Meeting, 2019.

T. Bsaibes, L. Pires, D. Czaplewski, D. López, and R. S. Decca, *Improving short range gravitation limits using cylinders*, Indiana Academy of Science Annual Meeting, 2019.

T. Bsaibes and G. B. G. Aviles, *Using radial distribution function to analyze the structure of indium oxide*, Denver X-ray Conference, 2016.

A. W. Schuman, **T. S. Bsaibes**, and M. L. Schlossman, "Microphase formation at a 2d solid–gas phase transition", Soft Matter **10**, 7353–7360 (2014).

AWARDS & HONORS

School of Science Outstanding Graduate Student Award 2023
Awarded

SMART Scholarship 2022
Awarded

Google PhD. Fellowship 2021
Nominated