Henry "Hank" M. Thurston, Ph.D., B.S.C.E.

CONTACT
INFORMATION

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EDUCATION

Ph.D. Physics (Exotic Materials),
Ph.D. Computational Math, Science, and Engineering, Michigan State University,
E Lansing, MI   March 2023
$\Sigma\Pi\Sigma$, ΣZ, GPA 3.74/4.00

M.S. Physics (Nuclear), Michigan State University, E Lansing, MI   May 2020
GPA 3.64/4.00

Machine Learning in Physics, FRIB Theory Alliance, E Lansing, MI   May 2019
Certification of Completion

B.S. Civil Engineering,
B.S. Physics, Gonzaga University, Spokane, WA   May 2017
$\text{T}\text{B}\Pi$, $\text{A}\Sigma\Lambda$, *Magna Cum Laude*, GPA 3.71/4.00

22 Professional Military Education Courses,
8 Service/Special Skills Schools, MCB Camp Pendleton, CA   2009 to 2012

ACADEMIC &
PROFESSIONAL
EXPERIENCE

CEO   Fall 2023 to present
Thurston Laboratories, LLC

- Business management, development, and marketing

- Conducts concrete, rebar, and other special inspections

- Oversees field and laboratory testing of construction materials

- Oversees specialty testing including environmental and radiological

Founder   Summer 2023 to present
Anthracene Softworks

- Business management, development, and marketing

- Oversees production of enterprise software products

- Computation modeling specialist, developing models of complex physical processes in physics and engineering

Lecturer in Physics   Fall 2021 to Spring 2023
Hillsdale College

- Planned, wrote, and delivered lectures to students

- Wrote and edited student lab manuals

- Oversaw safe and proper lab procedures

- Graded student work

- Hosted public telescope and astronomy nights

Graduate Research Assistant   Spring 2020 to Spring 2023

MSU Dept. of Electrical and Computer Engineering: Microwave, Plasma, and Materials Processing Lab, in conjunction with Fraunhofer USA

- Developed Diamond-based ultra-fast Neutron detection technology

- Conducted testing of detector at Weapons Neutron Research facility, Los Alamos National Laboratory Neutron Science Center, Los Alamos, NM.

- Performed Monte Carlo simulation of passage of particles through matter using SRIM, GEANT4, and GEANT4 with the GEANT Crystal Object extensions

- Derivation of theoretical framework for the distribution and diffusion of lattice defects in structured materials

- Development of meso-scale computer simulation of nuclear and atomistic effects in diamond lattice (done in Fortran and C)

- Physical characterization of diamond through X-ray Diffraction and Quantitative Birefringence

Summer Faculty Fellowship Program   Summer 2020, 2021

U.S. Air Force Research Laboratory

- Remote work in 2020 due to SARS-CoV2 viral outbreak

- Computational simulation of focused and broad-beam ion implantation in diamond crystal lattice

- Computational simulation of post-implantation defect diffusion

- In-Lab measurements to benchmark computational models (2021)

Founder, Chief Risk Officer   Winter 2019 to Present

Trinary Capital

- Quantitative Analysis of financial markets and asset portfolios

- Qualitative geoploitical and economic risk assessment

- Investor risk profiling

- Development and implementation of proprietary genetic algorithms for portfolio optimization

- Development of proprietary forward looking credit risk model

- Chief researcher into genetic algorithms and machine learning applied to management of financial assets

Graduate Research Assistant (MoNA Collaboration)   Summer 2018 to Spring 2020

National Superconducting Cyclotron Laboratory/Michigan State University

- Prepared two live-beam experiments at NSCL

- Led scheduling and project management efforts for experiment preparation

- Designed and built detector test apparatus

- Developed beamline/ion optics simulation code (Developed in Python)

- Participated in Neutron dark scattering experiments at the Los Alamos National Laboratory Neutron Science Center, Los Alamos, NM

Graduate Teaching Assistant — Summer 2018 to Spring 2020
Michigan State University

- Tutored students in Calculus-based Electricity and Magnetism

- Instructed Algebra and Calculus based physics labs and delivered "Mini-Lectures" delivered at the start of Lab Meetings

- Developed students' knowledge of the scientific process, experimental design, uncertainty, and error analysis.

- Graded students in a variety of deliverable exercises/assignments.

Undergraduate Research Assistant — 2017
Gonzaga University, Spokane, WA

1. 3 Body Nuclear Kinematic Modeling

   - Computational model of reactions in Activated Target-Time Projection Chamber
   - Development done in Python and Fortran
   - Traveled to National Superconducting Cyclotron Laboratory (NSCL) to collaborate with colleagues
   - Presented at Gonzaga ZagFam Weekend 2017

2. Finding a Relation Between Galactic Redshift and Radial Distance

   - Replication of Edwin Hubble's work with undergraduate program organic equipment
   - Presented at Pacific Northwest Mathematical Assc. of America Conference, 2017
   - Presented at Gonzaga ZagFam Weekend 2017
   - Research is ongoing

Granted Enrollment as Engineer in Training — Summer 2016
Washington State Board of Registration for Professional Engineers and Land Surveyors

Engineering Senior Design Capstone Project — Fall 2015 to Spring 2016
Gonzaga University, Spokane, WA

- Project Manager

- Oversaw design, construction, and testing of modular armor for expeditionary shelters

- Awarded funding from Gonzaga Center for Engineering Design & Entrepreneurship

Project Manager Gonzaga ASCE Concrete Canoe Team — Fall 2015 to Spring 2016
Gonzaga University, Spokane, WA

Estimator, Data Analyst, & Project Manager   Spring 2015 to Summer 2018
Garco Construction, Inc., Spokane, WA

- Analyze potential projects for risk and opportunity

- Collect, Analyze, and Assess historical cost and production data

- Manage projects, responsible for budget, materials, and subcontracts

- Manage interns, delegating work and ensuring accountability

- Mentor interns in real world skillsets in the Construction Management, Engineering, and Estimating fields.

- Have personally bid over 45 projects, including bridges, schools, industrial and military facilities, and a variety of private projects

- Wrote software (development done entirely in Python) to analyze historical data and simulate future projects, which has been proven to reliably outperform the leading commercially available equivalent software package. Development continues.

- Managed over $1.25 million worth of work, and bid over $500 million worth of work.

Undergraduate Lab Teaching Assistant   Fall 2014 to Spring 2015
Gonzaga University, Spokane, WA

- PHYS 103 Calculus Based Introductory Mechanics Lab

- Provided auxiliary instruction to students

- Oversaw safe and proper lab procedures

- Graded lab reports

ACADEMIC AND
COMMUNITY
SERVICE

Gonzaga ROTC Gonzaga University, Spokane, WA 2015-2018
Volunteered time to attend multiple multi-day and single day field exercises to assist in training Gonzaga's ROTC Officer Candidates

Physicists Inspiring the Next Generation Program 2019, 2020 NSCL, E Lansing, MI
Sat on a panel answering High School students' question about college and the sciences

Candidate for student Diversity and Inclusion Representative to MSU Department of Physics and Astronomy, 2020

VFW Post 2350 Honor and Color Guard member, 2023-present
Volunteer time to render military honors at military funerals and community events.

Elko High School Robotics Team, 2023-present
Mentor students in mechanical design, coding, and construction in preparation for competitions.

Nat'l Small Business Assoc. Leadership Council, 2023-present
Public and political outreach and education on public policy matters of concern to small businesses and their owners and operators.

AFFILIATIONS & MEMBERSHIPS	American Society of Civil Engineers
	Association for the Advancement of Cost Engineering
	American Physical Society, Div. of Nuclear Physics
	Materials Research Society
	Society for Industrial and Applied Mathematics
	International Code Council (ICC)
	Nat'l Small Business Assoc.

PUBLICATIONS

- *The Development Of A Novel Diamond-Based Neutron Detector and Quantum Color Center Fabrication Framework*, Dissertation, Michigan State University, 2023

- *A Comparative Survey of Low Energy Ion Implant Profiles Generated by Structured and Amorphous Monte Carlo Frameworks*, Nuclear Instruments and Methods B, (in review)

- *Positionally Opposed Schottky Semi-metal Ultra-fast Neutron Detector*, Nuclear Instruments and Methods A, (in progress)

COURSES TAUGHT

- PHYS103L Calculus Based Physics Lab (Gonzaga University)

- PHY252 Lab "DATA Lab" Algebra Based Physics Lab (Michigan State University)

- PHY191 Calc based Introductory Mechanics Lab (Michigan State University)

- Physics 100 (Hillsdale College)

- Private tutoring in a variety of subjects including Structural Analysis, Chemistry, and Algebra

SEMINARS AND TALKS GIVEN

- "The Role of Data Analytics in Construction Estimating" (AACE Int'l)

- "Finding a Relation Between Galactic Redshift and Radial Distance" (Mathematical Association of America Conference Jun. 2017)

- "3 Body Nuclear Kinematic Modeling" Poster Session (APS DNP Meeting Oct. 2017)

- "The Use of Diamond in the Detection of High Energy Neutrons" Conference Talk (MRS Fall Conference Nov. 2020)

- "Applications of Physics to Financial Markets" (MSU Physics Graduate Organization Colloqium Feb. 2021)

- "Development of an Enhanced Solid State Neutron Detector" Conference Talk (American Conference on Neutron Scattering Jun. 2022)

Last updated: May 29, 2024