

## Luke J. Thomas, M.S.

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### Professional Competencies:

Forensic Engineer who investigates:

- Vehicle and tractor-trailer accidents and other incidents involving optics, lighting, physics and mechanics of motion
- Pedestrian and bicycle accidents
- Human vision, lighting, conspicuity, and visibility
- Slip, trip, and fall incidents

Physicist with expertise in:

- Teaching college-level Physics and Astronomy
- Data analysis and quantitative thinking
- Research, design and conducting experiments

Experience Summary

- Adjunct faculty, Physics and Astronomy
- Research in optics and parity-time symmetry

### Employment History:

#### **Wolf Technical Services, Inc., Fishers, IN**

Physicist and Optical Engineer, Accident Reconstructionist (May 2022 to present)

- Expert analysis of automotive collisions, pedestrian strikes, railroad grade crossing collisions, and other incidents involving optics, lighting, physics, and mechanics of motion. Strong emphasis on human vision, lines-of sight, lighting, visibility under the influence of glare, darkness, fog, etc., stereoscopic depth perception, and other vision issues. Experienced in the use of computer models and field measurement techniques that enable the direct measurement of headlamp (or other light source) intensity at any point in the forward field, and its application to the quantification of scene brightness, contrast and human visibility. These pioneering techniques work with the actual light source in question and support the quantification of visibility parameters while the light, the observer and the hazard are in relative motion.
- Performs accident reconstruction investigations for passenger automobiles, heavy vehicles, and tractor trailers; tire and wheel inspections, vehicle inspections and crush analysis. Images and interprets data from Event Data Recorders (EDRs).



- Performs laser mapping of accident sites and vehicle damage profiles using a Total Station or Trimble GNSS survey, inspection and measurement of vehicles, and field survey work which includes documenting evidence. As an FAA Remote Pilot, he captures aerial images and video with our drone/UAV for both property and scene inspections.
- Assists product design teams with testing and validation including test equipment design and setup, coding test equipment, and preparing test reports. For Wolf's DHA Bougie-Integrated Endotracheal Intubation Stylet project, he conducted illuminance tests regarding lighting patterns and output in order to determine optimal positioning for the lighting source and camera placement on the device. Also contributed in the areas of research, testing and validation on two projects for the US Navy: the Aircrew-Mounted, Self-Adjusting Tether System and Solutions for Individual Blade Control.

**Ivy Tech Community College**, Indianapolis Indiana  
Adjunct Faculty (August 2019 – May 2022)

Developed and delivered content for lectures and labs to both Physics and Astronomy undergraduate students. Provided timely feedback on in-class activities, lessons and exams.

**IUPUI**, Indianapolis, Indiana (August 2018 – August 2021)  
Teaching and Lab Assistant  
Graduate Assistant Researcher

Research/Engineering for Master of Science Thesis Project: *Injection Current Modulated Parity-Time Symmetry in Coupled Semiconductor Lasers*

Developed lesson plans for physics courses and led recitation sessions for General Physics II courses. Assisted in the delivery of lab content and the teaching of complex techniques.

Conducted complex research in the realm of optics and parity-time symmetry. Supervised the day-to-day operation and maintenance of the laser and lab. Responsible for experiment design and presentation of results.

**Manchester University**, North Manchester, Indiana  
Physics Research Assistant (Jan 2015 – Dec 2015)

Performed computational astrophysics. Developed code that produced luminosity, temperature, mass, and pressure for main sequence stars, mapped lifetimes of main sequence stars, analyzed convective and radiative zones of main sequence stars.

**Education:**

Purdue University, Indianapolis, IN 2021  
Master of Science, Physics with Focus in Optics and Parity-Time Symmetry

Manchester University, North Manchester, IN 2016  
Bachelor of Science, Physics



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**Continuing Education:**

- Fundamentals of Vehicle Dynamics (SAE) November 2023
- Pedestrian/Bicycle Crash Investigation – Level 1 (IPTM) May 2023
- HVE Forum, Engineering Dynamics Corporation February 2023
- Clearly Visible Optics, Lighting & Visibility for the Forensic Investigator June 2022
- Drone Pilot Ground School (UAV Coach) May 2022
- Bosch CDR Tool Technician Training (IPTM) May 2022
- Fundamental Techniques of Crash Investigation (IPTM) May 2022
  - Vehicle Lamp Examinations in Traffic Collisions
  - Safety Belt Examinations
  - Roadway Evidence
  - Tire Examinations – Tire and Wheel Forensics
  - Case Preparation and Courtroom Presentation

**Computer Systems:**

Proficient in PC-based systems including AutoCAD, Python, Logger Pro and LabVIEW

**Licenses and Certifications:**

Bosch Certified Crash Data Retrieval (CDR) Technician

FAA Remote Pilot Certificate – Small Unmanned Aircraft System

**Current and Past Memberships and Affiliations:**

Ohio Traffic Accident Reconstruction Association (OTARA)

Member, American Chemical Society

Member, Pi Sigma Physics Society

President of Manchester University’s Chapter of Society of Physics Students

President and Founder of Manchester University Self Defense Club