

ELIJAH R. JENSEN
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Education

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| 2015 | UNIVERSITY OF LOUISVILLE
<i>Masters of Science in Physics (Cum Laude)</i> |
| 2013 | UNIVERSITY OF VERMONT
<i>Electrical Engineering Masters Program Study</i> |
| 2012 | AUSTIN PEAY STATE UNIVERSITY
<i>Bachelor of Science in Physics (Magna Cum Laude)</i> |

Academic Positions

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| 2013-2015 | Graduate Teaching Assistant, University of Louisville (Physics) |
| 2012-2013 | Graduate Teaching Assistant, University of Vermont (ECE) |
| 2009-2012 | Tutor, Austin Peay Academic Support Center |

Research Interests

- Optics
- Electromagnetic Theory, Electronics/Microelectronics
- Mechanical Engineering (Device Construction)
- Computational Science (Modeling of Electrical Properties)
- Materials Science (Thin Films and Graphene)

Research Projects:

Current:

- High Dynamic Range Seismic Sensing using custom designed 32bit DAQ.
- Design of custom IR imaging devices.

2015

- High Dynamic Range Instrument Design.

- Optical Detection of Surface Waves.
- High Dynamic Range Seismic Sensing using custom designed 32bit DAQ.

2014

- Design of 24 bit Analog to Digital Capture device.
- “Visualizing” Seismic Waves via Audio Conversion.

2013

- Computational modeling of micro and nano-scale antenna designs (THz and IR sensing applications).
- Computational modeling of EM waves.

2012

- Building better electronic systems for Regenerative braking in electric vehicles.
- Design of efficient, safe, and reliable Transformer-less Power supplies.
- Electric Motor controller design (MOSFET switching).
- PCB manufacturing with desktop CNC milling machines. (new computer code and processes)

2011

- Dynamo design for Regenerative braking in electric vehicles.
- Electric Car Research with FSAE team. (team leader)
- Expanding previous reproach in solar power regulation technology Fall 2011
- Solar Panel Power Regulation circuits. This uses some of the same ideas from the Regenerative systems. These systems use a complex circuit to ensure that the batteries accept charging even under low power conditions.
- Developed firmware for ATMEL microcontroller projects.
- Used microcontroller to drive Robotics hardware with video processing input.

2010

- Computational modeling of Zinc Nano-wire
- Used nwchem and Guassian to model a Zinc nano-wire for possible use in nano photo-voltaics

Papers/Articles

Fractional Intensity Modulation Of Diffusely Scattered Light

John Kielkopf, Elijah Jensen, Univ. of Louisville (United States); Frank O. Clark, Bradley Noyes, Wopeco Research (USA)

Published in SPIE Proceedings Volume 9608: Infrared Remote Sensing and Instrumentation XXIII September 2015

Remote Optical Detection Of Ground Vibrations

Robert M. Shroll, Benjamin St. Peter, Steven Richtsmeier, Bridget Tannian, Spectral Sciences, Inc. (United States); Elijah Jensen, John Kielkopf, Univ. of Louisville (United States); Wellesley E. Pereira, Air Force Research Lab. (United States)

Published in Proceedings Volume 9608: Infrared Remote Sensing and Instrumentation XXIII September 2015

Talks

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| 2012 | Lithography, Double Patterning (how to make a nano trace) (UVM) |
| 2012 | Design of 80v, 19 HP motor controller for EV (TAAPT) |
| 2012 | Design of Safe and Reliable Transformerless Power Supply (TAAPT) |
| 2012 | PCB production in small fabrication lab (TAAPT) |
| 2011 | Computational Analysis of Complex AC Circuits. |
| 2011 | Computational Analysis of dynamo generator. |
| 2011 | Solar Power Power Regulator using Switching Technology |

Honors and Awards

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|------|---|
| 2015 | Recipient of Iyad Khair Award for Excellence in Physics |
| 2013 | Dean's List of Distinguished Students (UVM) |
| 2011 | Inducted into Pi Mu Epsilon Math Society |
| 2010 | Inducted into Phi Kappa Phi, Honorary Society |
| 2008 | Dean's List of Distinguished Students, all semesters. |
| 2010 | Recipient of three Space Grants |
| 2011 | NSF MaPs Scholarship |
| 2010 | NSF MaPs Scholarship |

Skills

Languages: C, C++, FORTRAN, JavaScript, Python, PHP, HTML, BASIC

Programs: MATLAB, Mathematica, Minitab, Igor Pro, National Instruments Lab-View, Pro-tools, Logic, Reason, Arduino IDE, Microsoft Office, Unix/Linux, L^AT_EX, NwChem, Gaussian, Octave, Spice, Mac-Spice, xmgrace, HTML/CSS, Qt GUI Programming, AVR Microcontroller C programming, Final Cut Pro, Motion, Avid, Apple Software/Hardware, Eagle CAD, OrCAD, Autodesk Inventor, AutoCAD, Google SketchUp, Pro Engineer, Roland MODELA, G code, M code, RML code. GEDA suite, AppleWorks, iWork, Gimp, MAYA, Adobe Photoshop, Blender, gEDA Suite.

Equipment: Agilent Oscilloscopes, Function Generators, Power Supplies, Multimeters. HP Oscilloscopes, Function Generators, Power Supplies, Multimeters. Breadboarding, SMD soldering, PCB production, CO2 Laser Equipment, Laser Diodes, AVR microcontrollers, Physics Laboratory Equipment, LABVIEW, Vernier, Lathe (Manual and CNC), 3D printer, Milling (CNC and Manual), Ultrahigh vacuum systems, Repair of any equipment listed above.

Service

- Dept. Representative to the Graduate Student Union (University of Louisville) 2015-2016
- Dept. Representative to the Graduate Student Council (University of Louisville) 2015-2016
- Serve on Texas Instruments Expert Advisory Panel from 2015
- Tutored Physics, Math, Biology, and Chemistry from 2009 - 2012
- I play Violin, Piano, and Guitar, and have performed for many concerts and charity events.
- I have taught music both privately and for the Creative School for the Arts at Austin Peay. (The Creative School for the Arts is a Federally funded after school program for young people to experience and learn music)

Affiliations

IEEE

American Physical Society

Sigma Pi Sigma