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## Education

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

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- Physics
- Electrical Engineering, Electromagnetic Theory, Electronics/Microelectronics
- Mechanical Engineering (Device Construction)
- Computational Science (Modeling of Electrical Properties)
- Materials Science

## Research Projects:

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2015

- High Dynamic Range Instrument Design.

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.
- 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.
- 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.
- Wrote programs for ATMEL microcontroller
- 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 photo- voltaics

## 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

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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<sup>A</sup>T<sub>E</sub>X, 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, CO<sub>2</sub> 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

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- 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 also 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)
- Performed with New England Conservatory youth orchestra in Boston from 1998- 2005.

## Affiliations

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IEEE

American Physical Society

Sigma Pi Sigma