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GEOFFREY LENTNER

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Education

Ph.D. in Physics (expected) 2019
University of Notre Dame, Notre Dame, IN

M.Sc. in Physics 2015
University of Louisville, Louisville, KY

Thesis title: *The Local Cygnus Cold Cloud and Further Constraints on a Local Hot Bubble*
Committee: James Lauroesch, John Kielkopf, Lutz Haberzettl, Ryan Gill

B.Sc. in Physics 2013
Purdue University, West Lafayette, IN

Research Experience

Master's Thesis 2014 - 2015
James Lauroesch (Advisor, Associate Professor) University of Louisville
Department of Physics and Astronomy

- Spectral analysis of stellar targets to identify ISM absorption from local cold cloud, with implications for our understanding of the Local Hot Bubble.
- Develop entire software framework (SLiPy) for automated calibration of absorption spectral data (e.g., telluric corrections, velocity calibrations) and interactive fitting of line profiles.
- Advanced scripting.

Undergraduate Controller 2012 - 2013
Marc Caffee (Director of PRIME Lab, Professor) Purdue University
Department of Physics and Astronomy PRIME Lab

- A dedicated research and user facility for accelerator mass spectrometry with a 10 MeV Van de Graaff, tandem accelerator.
- Monitor data acquisition and control systems and record data; make adjustments and intervene at run time.
- Prepare new samples in clean room environment; install cathode wheels at the accelerator.

Undergraduate Research Assistant 2011 - 2012
Rafael Lang (Assistant Professor) Purdue University
Department of Physics and Astronomy

- Research and development in collaboration with the Xenon100 experiment to directly detect dark matter (liquid nobel gas targets for detecting rare dark matter interactions via nuclear recoils).
- Design and construct photo-opaque test chamber to calibrate PMTs for single photon detection.

Undergraduate Research Assistant 2011
Jaehyon Rhee (Research Assistant Professor) Purdue University
Department of Physics and Astronomy

- Image processing, photometry.
- Data reduction and elemental abundance analysis of very-metal-poor stars.

Software & Programming

Unix » I have several years of experience developing in the unix environoment, including scripting and build tools (e.g., *bash*, *make*). I am also proficient using version control tools (e.g., *git*) for collaborating with peers on software projects including the creation and merging of branches. My understanding of unix and all of the below listed tools and languages is entirely self taught. I am passionate about programming and building software tools for doing awesome things.

C++ » I enjoy the power and flexibility of C++ programming. I've developed a number of **simulation codes** and frameworks in C++. I am currently also collaborating with others to put together a new template library using the variability of C++14 for n-dimensional data structures for both tensor analysis and elemental operations. I am knowledgable in object oriented design, encapsulation, enheritance, RAII, multithreading, algorithms and data structures.

Python » I do a lot of work in Python (and consider myself an advocate for the adoption of Python 3 for scientific applications). Python's standard libraries and dynamically typed syntax make it very efficient for developing scientific applications. While I enjoy C++, Python is often the better tool for the job.

HTML » I have a working knowledge of HTML5, CSS3, Javascript, and PHP. I have maintained my own **website** for years and have started to explore dynamic behavior and responsive design. I'm actually even working on a new (very lightweight) framework in Python to build and maintain HTML websites in a more object oriented fashion.

Open Source » I consider myself to be a proponent of open source. I enjoy contributing to open source projects. My **GitHub** profile has quite a number of repositories of both **original work** and forks of current projects.

Other Software » In addition to the above mentioned items I am proficient in a number of other software programs and languages, including MATLAB/Octave, Mathematica, ROOT, IRAF, DS9, and LaTeX(to name a few).

Teaching Experience

I have taught and continue to teach both physics and astronomy undergraduate courses and laboratories. The below listed assignments reflect GTA positions; however, while at the University of Louisville I was in fact the instructor of record for the Fundamentals of Physics lab and was responsible for the course itself. Further, I have also managed a distance education class online for the Elementary Astronomy Laboratory.

University of Notre Dame

- *Descriptive Astronomy, Observatory* (Physics 10140)

University of Louisville

- *Elementary Astronomy* (Physics 107) x4
- *Elementary Astronomy Laboratory* (Physics 108) x10
- *Fundamentals of Physics Laboratory* (Physics 223) x2

University Service and Professional Affiliations

Sigma Pi Sigma 2015 - Present
Member

Graduate Student Union 2014 - 2015
Division Representative for Natural Sciences University of Louisville

Graduate Student Council 2014 - 2015
Member University of Louisville