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Education

- 2008 – 2014 Ph.D., Physical Chemistry, Emory University (Atlanta, USA)
Thesis: “Methanol Photodissociation as a Case Study for Probing Complex Interstellar Organic Chemistry”
- 2004 – 2008 B.S., Chemistry, Pittsburg State University (Pittsburg, Kansas, USA)
Graduated with Departmental Academic Honors
- 2000 – 2004 Southeast High School (Cherokee, Kansas, USA)
Graduated with Honors

Work/Research Experience

- 2014 – Present *Post-doctoral Researcher*, Max-Planck-Institut für extraterrestrische Physik, Garching, DE.
- Ported a fully-featured F77-based astrochemical model to python.
 - Support libraries and computer interfaces for instrumentation control (python).
 - Computer interfaces for instrumentation control and data visualization/analysis (PyQt/PySide).
 - Basic system administration of office/lab/server machines (8 separate Linux systems), including internet-facing web server and helpdesk support.
 - Collaboration/administration of data/information management systems (wiki, Django/python, mysql/postgresql, html/php/css/javascript).
 - Design and implementation of automated remote operations software for new astronomical instrument (4MOST: multi-fibre spectrograph).
 - Software testing frameworks (unit tests, end-to-end tests, GitLab CI/CD)
- 2008 – 2014 *Graduate Research Assistant*, Emory University, Atlanta, USA.
- Full operation of astronomical observatory (8 weeks on-site, ca. 1 week remote) for large, multi-year project, and lead manager of data preparation/processing (proprietary scripting language, shell, perl, python).
 - Computer interfacing for instrumentation control and data visualization/analysis (NI Lab-Windows/CVI/ANSI C).
- 2004 – 2008 *Undergraduate Research Assistant*, Pittsburg State University, Pittsburg, Kansas, USA.
- Design/construction of a diskless beowulf HPC cluster for use with *ab initio* quantum chemical calculations.

Summer 2007 *Undergraduate Research Assistant*, IBM Almaden Research Center, San Jose, California, USA

- Quantum chemical calculations to study chemical catalysis.
- Software development to tailor an in-house molecular viewer (Java).

2004 – 2006 *Computer Technician*, Four State Computer, Pittsburg, Kansas, USA

- Computer troubleshooting/repair.

Skills and Qualifications

Analytical thinking

System design/engineering

Molecular spectroscopy and characterization (UV/Vis, IR, Raman, microwave/mm/submm, NMR, GC/MS)

Ab initio quantum chemistry (Psi4, GAMESS US, Gaussian)

Single-dish observational radio astronomy

Synthetic organic chemistry

Optics: amateur astronomy, amateur photography, hobbyist microscopy, quasioptical mm-/submm-wave beams, laser alignment/re-tuning

Workshop tools/machining: mill, lathe, band saw, handheld rotary tools

Vacuum technology (high vacuum)

Basic analog circuit design/repair and electronic interfaces (incl. RasPi)

Computer-aided design/visualization/analysis: Solidworks, SYNOPSIS, ImageJ

Document production: L^AT_EX, Microsoft Office, Google Docs, LibreOffice

Data analysis/visualization: Gnuplot, real-time plotting via PyQtGraph, vispy, Matplotlib, computer algebra systems (Maple, Sage, MATLAB, GNU Octave)

Job schedulers: Cron, Apache Airflow

Programming languages: Python, Unix shell, Perl, HTML5 (PHP, CSS, JS), Java, NI LabWindows/CVI (ANSI C) C++, Fortran (1977, 2003)

Operating systems: Linux (Debian/Ubuntu), Android, Microsoft Windows, macOS 10+

Advanced computer administration/repair

Other computing systems: GUIs (Qt, Tk), instrumentation interfaces (device drivers, communication socket/APIs), open-source software (incl. git), web server (apache2), mail server (postfix SMTP, IMAP)

Languages spoken: English (native), German (very good)

Interests

Computing

Instrumentation/interfaces

Data Visualization

Travel

Music (piano/keyboard)

Amateur photography and astronomy