Dr. Jacob C. Laas
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Education

2008 – 2014	Ph.D., Physical Chemistry, Emory University (Atlanta, USA) Thesis: "Methanol Photodissocation 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).
- Basic system administration of office/lab computers (ca. 4 Linux systems).
- Collaboration/administration of data/information management systems (wiki, Django/python, mysql, html/php/css)

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 LabWindows/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, 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

Computer-aided design/visualization/analysis: FreeCAD, Solidworks, SYNOPSYS, ImageJ, The GIMP

Document production: LaTeX, Microsoft Office, LibreOffice

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

Programming languages: Python, Unix shell, Perl, HTML (v4/v5, PHP, CSS, JS), Java (PC, Android, Beanshell), NI LabWindows/CVI (ANSI C) C++ , Fortran (1977, 2003)

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

Advanced computer administration/repair

Other computing systems: user interfaces (Qt, Tk), instrumentation interfaces (device drivers, communication socket/APIs), open-source software (incl. git versioning control)

Outdoor camping (12 years in Boy Scouts of America)

Languages spoken: English (native), German (A1 certified, ca. B1/B2 uncertified)

Interests

Computing

Instrumentation/interfaces

Data Visualization

Travel

Music (piano)

Disc sports: disc golf, ultimate

Backyard astronomy