Douglas Raymond Davis

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Education

- **PhD in Experimental Elementary Particle Physics** Graduated November 2020

  Duke University, Durham, NC, USA
  - Goshaw Family Fellowship (2014, 2018)

- **BS in Physics (with Special Honors)** Graduated May 2014

  The University of Texas at Austin, Austin, TX, USA
  - Multiple undergraduate merit based scholarship awards.

Experience

- **Graduate Student Researcher & ATLAS Experiment Collaborator** 2014 — 2020

  Duke University & CERN
  - **Lead data analyst** measuring the production of a rare physics process with significant background: developed data analysis pipelines for processing terabytes of data, trained boosted decision tree classifiers for separating signal from background, and performed statistical tests comparing experimental observations against theoretical models. *Dissertation research*.
  - **Deputy coordinator** of the Transition Radiation Tracker software group: co-lead collaboration software team; developed and maintained data analysis API, oversaw junior student projects focusing on maintenance of existing particle identification tools and prototyping machine learning methods.
  - **Graduate student mentor** to multiple undergraduate researchers: guided undergraduate students on software projects ranging from building graphical event displays to training deep neural networks.
  - **Teaching Assistant** for undergraduate courses in Duke Physics Dept.

- **Undergraduate Researcher** 2012 — 2014

  UT Austin & Fermi National Accelerator Laboratory
  - **Undergraduate researcher** constructing and developing simulation and reconstruction software for a cosmic ray muon telescope. Used simulations to study the exposure of a particle detector to auxiliary data sources.

Computing

- Proficient Programming: C++, Python
- Capable Programming & Scripting: Bash, C, Clojure, Emacs Lisp.
- Operating Systems, Libraries, and Tooling: Unix/Unix-like OSes, the SciPy & PyData stacks (NumPy, SciPy, Matplotlib, Pandas, Scikit-learn, etc.), LightGBM, pybind11, conda(-forge), ROOT, Boost, OpenMP, Emacs, Git, CMake, Sphinx, HTCondor, containerization, continuous integration/testing.
- Open Source Software Projects: pygram11 (GitHub link)

Mentoring, Outreach

- North Carolina Science Festival, State-wide Star Party telescope operator.
- Physics Dept. peer mentor at The University of Texas at Austin.