Dr. Giordon Stark — *"jack of all trades, postdoc of one"*

CONTACT INFORMATION

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📖 Publication list (500+ papers)
📄 curriculum vitae

SUMMARY
- Particle physicist on the ATLAS detector at CERN looking to transition to the private sector.
- "Big data scientist" analyzing petabytes of collisions for signs of new physics.
- Passionate about building reusable, robust, containerized data analysis pipelines, creating actionable data products, and developing software to improve user experience.

</> HIGHLIGHTED PROJECTS

≫ pyhf— statistics GPU numpy scipy tensorflow jax pytorch auto-diff

Created a python-only hypothesis testing framework which speeds up asymptotic statistical fits by a few orders of magnitude, using tensor algebra libraries such as `jax` and `pytorch`.

≫ GitLab CI/CD Training— gitlab tutorial continuous integration python C++

Produced a three-hour tutorial using GitLab CI/CD with closed-captioned YouTube videos aimed at teaching physicists how to develop testable and reproducible analyses.

≫ itkdb— python betamax requests unit tests integration tests mongodb

Developed a user-friendly python interface to a quasi-RESTful API used to register, test, and ship millions of detector components for the ATLAS detector upgrade in 2028. This speeds up custom tooling needed by third-party vendors for interacting with the database.

≫ gFEX— FPGA firmware embedded OS cross-compilation

Collaborated with a team of physicists and engineers to design a single PCB to process 40 TB/s of raw data from the detector. Pioneered the embedded processor firmware currently in use.

≫ labRemote— pybind11 python C++ CI/CD wheels

Wrote the python-bindings for a C++ framework that slow-controls laboratory hardware, and enhanced the CI/CD to deploy pre-built, relocatable binaries to make it easier for technicians and users to install.

⚙ WORK HISTORY

SCIPP, Santa Cruz, California   📅 **August 2018 – present**
Post-doctoral Researcher, ATLAS Experiment at CERN
- Led the effort within the 5000-person collaboration to adopt GitLab CI/CD for analysis development, paper publication, and documentation.
- Coordinated HPC resources for generating billions of Monte Carlo events for physics analyses
- Organized and instructed in software tutorials for hundreds of physicists.
- Built up the hardware, firmware, front-end, and back-end infrastructure for testing and qualifying CMOS-based electronic chips for the instrumentation upgrade of the ATLAS charged particle tracking detector for the next decade.
- Developed tooling and infrastructure to support the next-generation of data products published by physics collaborations, improving communication with theorists.

UChicago, Chicago, Illinois   📅 **August 2012 – July 2018**
Graduate Research Scientist
- Migrated the 500k+ LOC C++ offline analysis project from SVN to Git and made it public.
- Collaborated with engineers on instrumentation design for the upgrade of the ATLAS detector real-time hardware-based decision-making system to process 40 TB of data every second.
- Developed and maintained a user-friendly C++ analysis framework for physics across multiple domains including Standard Model, searches for new physics, and calibrations.
- Came up with the innovative strategy to use OpenEmbedded firmware layer in hardware instrumentation which paved the way for embedded processor design in High Energy Physics

🎓 EDUCATION

Ph.D. **University of Chicago**, Chicago, Illinois   📅 **September 2012 – July 2018**
🔗 *The search for supersymmetry in hadronic final states using boosted object reconstruction*

B.S. **California Institute of Technology**, Pasadena, California   📅 **September 2008 – June 2012**
🔗 *Optical Coating Brownian Thermal Noise in Gravitational Wave Detectors*