

# 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](#)