Kirby Hermansen

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GitHub
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Education

Michigan State University, East Lansing, MI — Exp. August 2023
Ph.D. in Physics; Graduate Certificate in High-Performance Computing — GPA: 3.7/4.0

University of Notre Dame, South Bend, IN — May 2015
B.S. in Physics, Economics — GPA: 3.56/4.0

Professional Experience

Facility for Rare Isotope Beams (FRIB) — 2017–
Graduate Research Assistant, Nuclear Astrophysics Experiments — East Lansing, MI

– Clean, cut and analyze experimental data to constrain beta-decay transitions in select neutron-rich nuclei
– First author on a numerical sensitivity study of nuclear reaction rate variations in core-collapse supernovae simulations
– Contributed to 10 NSF-funded experiments and ongoing detector systems commissioning
– Communicate scientific projects to public via guided tours of the cyclotron facility

Graduate Research Assistant, SECAR Beam Development — 2018–

– Designed a machine-learning pipeline for optimizing magnet settings in the SECAR separator from the ground up
– Ported the pipeline to Microsoft Azure cloud resources as a 2021 ICER Cloud Computing Fellow
– Optimized results have been employed in an NSF-funded experiment, and part of a forthcoming paper

Travelers Insurance Fixed Income Investments — 2015–2017
Senior Associate Quantitative Analyst — St. Paul, MN

– Assessed return attribution on a $30 billion municipal bond portfolio, communicated results to VPs
– Modeled asset/liability matching to minimize portfolio systematic and curve risk
– Managed the department SharePoint database and implemented workflows for faster, clearer communication

European Organization for Nuclear Research (CERN) — 2014
Undergraduate Research Assistant and Programmer — Geneva, Switzerland

– Performed sensitivity studies comparing lifetime ratios and kinematic variables to better determine B-meson lifetimes
– Developed and programmed elements of the ROOT/R interface library, later distributed in ROOT

Technical Skills and Interests

Concepts: Machine Learning • Big Data Pipeline Analysis • High-Performance Computing • Software Management • Version Control • Cloud Computing • Open-Source Collaboration • Linux Computing

Programming: *Proficient:* Python • C++ • Git • ROOT • Bash • Azure • Docker • LaTeX • PyTorch
Familiar: HTML • Node.js • SQL • MS Access • SharePoint • MPI • R • JavaScript • VBA

Publications: 8 publications; 3 refereed; 2 in prep. *Citations:* 11; *h*-index: 3

Language: *Native:* English; *Basic:* Spanish • French

Personal Projects

Major League Baseball Daily Hit Predictor (HitBot) — 2022–

– Scraper to pull daily updates from MLB player stats, along with future matchup data and store in a private database
– Pipeline a ML algorithm to predict the most likely players to get a hit on a daily basis given past data
– Upload daily predictions—which have contributed to a $> 70\%$ success rate—to my personal website