BIANCA J. POL

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EDUCATION

University of California, Berkeley *August 2024 - present*
Ph.D., Physics

University of Chicago *September 2020 - June 2024*
B.A., Physics with Honors GPA: 3.874

RESEARCH EXPERIENCE

Charge Order in the Blume-Capel Model on a Triangular Lattice *summer 2023*
NSF REU at the University of California, Davis with Richard Scalettar
Used Monte Carlo methods to investigate both magnetic and charge order in the Blume-Capel model on a triangular lattice. Proposed and developed novel methods for determining the location of phase boundaries.

Sensitivity Analysis for QCD Axino Searches *fall 2022-spring 2024.*
Miller Lab, University of Chicago
Utilized phenomenological approaches to conduct a sensitivity analysis on QCD axion + SUSY models, such as developing an analysis pipeline for running truth- and detector-level collision reconstruction software over a physical parameter space of interest. Performed data analysis and visualization to validate software outputs and propose regions of detector sensitivity in this parameter space given a certain set of detector signatures.

Nuclear Sensitivity Studies of Astrophysical R-Process Models *summer 2022*
NSF REU at Facility for Rare Isotope Beams, Michigan State University with Hendrik Schatz
Developed an analytical framework utilizing modular nuclear reaction network SkyNet for identifying the specific rare isotopes to whose properties the outcome of the nuclear rapid neutron capture process is most sensitive to.

Miscibility Studies for Iron-Silicate Mixtures *summer 2021- spring 2022*
Laboratory for Mineral Physics, University of Chicago
Determined miscibility of iron in various kinds of mantle silicates using diamond anvil cells and SEM.

Presolar Grains in the Murchison Meteorite *summer 2021*
CHILI Lab, University of Chicago
Identified presolar grain candidates in a meteorite sample with energy dispersive X-ray spectroscopy.

PUBLICATIONS

G. Hoshino, K. Dona, K. Harigaya, D. W. Miller, J. T. Offerman, **B. Pol**, B. Rosser, and C. Tosciri, Bridging the divide: axion searches and axino phenomenology at colliders. arXiv:2511.07224 [hep-ph].

PRESENTATIONS

APS Fall Meeting of the Division of Nuclear Physics, New Orleans, LA, October 2022. Pol, B. "Nuclear Sensitivity Studies of Astrophysical R-Process Models" (oral presentation).

APS Conference of Undergraduate Women in Physics, Argonne National Laboratory, January 2023. Pol, B. "Nuclear Sensitivity Studies of Astrophysical R-Process Models" (poster).

Gulf Coast Undergraduate Research Symposium, Rice University, October 2023. Pol, B. "Charge Order in the Blume-Capel Model on a Triangular Lattice" (oral presentation).

Midstates Consortium for Math and Science Undergraduate Research Symposium, University of Chicago, November 2023. Pol, B. "Charge Order in the Blume-Capel Model on a Triangular Lattice" (oral presentation).

PYTHON ∘ ***C*** ∘ ***UNIX*** ∘ ***BASH*** ∘ ***LaTeX*** ***ENGLISH*** ∘ ***ROMANIAN***

ACTIVITIES AND OUTREACH

Graduate Student Representative, U.C. Berkeley Equity and Inclusion Committee *2024-2025*
Facilitated communications between the graduate student body and administration regarding departmental climate towards underrepresented groups in physics through organizing and moderating a town hall discussion.

Undergraduate Representative, U. of Chicago Physics Teaching Activities Committee *2023-2024*
Advised faculty members on the Teaching Activities Committee with curriculum improvement in order to assess and reduce pre-college preparation related discrepancies in the introductory math and physics curricula.

Outreach Director, U. of Chicago Society of Women in Physics *2022-2024*
Arranged outreach events with female physicists, both within the University and visiting speakers; collaborated with other student organizations; organized and participated in joint mentorship program with graduate division.

Events Director, U. of Chicago Science Olympiad *2020-2024*
Supervised all test writing and quality control processes for the University's invitational tournament, geared towards Chicago area 6th-12th grade student teams.

STEM Mentor, U. of Chicago Girls in STEM Mentorship Pilot Program *fall 2023*
Supported access to extracurricular STEM learning to South Chicago middle school girls by providing scientific knowledge, STEM career mentorship, and hands-on support.

Content Fellow, National Science Olympiad *fall 2022*
Created practice testing materials for 6th-12th grade students competing in STEM tournaments nation-wide.

Student Teacher, Michigan State University GATE-MST *summer 2022*
Assisted in teaching a course on nuclear astrophysics to gifted and talented 7th-8th grade students as part of the MSU Gifted and Talented Education: Math, Science, and Technology program.

Teaching Volunteer, Splash! Chicago *spring 2022*
Created and taught a lesson on the fundamentals of mineral science for high school students in South Chicago.

Environmental Educator, U. of Chicago Phoenix Sustainability Initiative *2020-2021*
Designed and implemented a supplementary environmental science curriculum for a South Chicago middle school.

AWARDS AND SCHOLARSHIPS

Graduate Research Fellowship Program Honorable Mention, National Science Foundation *2025*
Ling-Lie Chau Excellence Award, University of California, Berkeley *2024*
Chancellor's Fellowship, University of California, Berkeley *2024*
cum laude, University of Chicago *2024*
Dean's List, University of Chicago *2021; 2022; 2024*
National Merit Scholarship, University of Chicago *2020*
SAE Detroit Section Scholarship, Society of Automotive Engineers *2020*
Semifinalist, U.S. Presidential Scholars Program *2020*