Sidney Mau

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Education

Stanford University: *Ph.D., Physics* — Expected 2025

The University of Chicago: *B.A. with Honors, Physics* — Expected 2020

Honors and Awards

Lewis Prize, Department of Physics, University of Chicago — 2020

NSF Graduate Research Fellowship, National Science Foundation — 2020

KIPAC Fellowship, Kavli Institute for Particle Astrophysics and Cosmology, Stanford University — 2020

Provost's Scholar Award, University of Chicago — 2016–2020

Dean's List, University of Chicago — 2016–2019

Research Experience

Survey Science Research Group — 2017–2020

Kavli Institute for Cosmological Physics, University of Chicago

Undergraduate group leader, PI: Professor Alex Drlica-Wagner

- Using Milky Way satellite galaxy demographics to constrain Dark Matter decay
- Searching for faint Milky Way satellite candidates using data from DES, BLISS, MagLiteS, DELVE, DECaLS, Pan-STARRS, and *Gaia*
- Developing and maintaining code for faint Milky Way satellite searches successfully used by other undergraduates in the research group
- DECam observing in-person on the 4m Blanco telescope in Chile for MagLiteS for 4 nights
- DECam observing remotely from Fermilab on the 4m Blanco Telescope for DELVE for 4 half-nights

ATLAS Experiment — 2018–2020

Enrico Fermi Institute, University of Chicago

Undergraduate research assistant, PI: Professor Mark Oreglia

- Using machine learning to optimize Higgs to invisible event classification for the Vector Boson Fusion plus missing transverse momentum Run 2 analysis
- Repairing 3in1 bigain cards and mainboards used in the ATLAS Tile Calorimeter in the LHC at CERN
- Analyzing statistical impacts of a risk register to cost and scheduling for ATLAS
- Served as the Tile Data Quality Validator for one week

Publications

1. E. O. Nadler, R. H. Wechsler, K. Bechtol, Y.-Y. Mao, G. Green, A. Drlica-Wagner, M. McNanna, **S. Mau**, A. B. Pace, J. D. Simon, A. Kravtsov, S. Dodelson, et al. (DES Collaboration), "Milky Way Satellite Census. II. Galaxy–Halo Connection Constraints Including the Impact of the Large Magellanic Cloud," The Astrophysical Journal **893**, 48 (2020), [arXiv:1912.03303]
2. A. Drlica-Wagner, K. Bechtol, **S. Mau**, M. McNanna, E. O. Nadler, A. B. Pace, T. S. Li, A. Pieres, E. Rozo, J. D. Simon, A. R. Walker, R. H. Wechsler, et al. (DES Collaboration), "Milky Way Satellite Census. I. The Observational Selection Function for Milky Way Satellites in DES Y3 and Pan-STARRS DR1," The Astrophysical Journal **893**, 47 (2020), [arXiv:1912.03302]
3. **S. Mau**, W. Cerny, A. B. Pace, Y. Choi, A. Drlica-Wagner, L. Santana-Silva, A. H. Riley, D. Erkal, G. S. Stringfellow, et al. (DELVE Collaboration), "Two Ultra-Faint Milky Way Stellar Systems Discovered in Early Data from the DECam Local Volume Exploration Survey," The Astrophysical Journal **890**, 136 (2020), [arXiv:1912.03301]
4. **S. Mau**, A. Drlica-Wagner, K. Bechtol, A. B. Pace, T. Li, M. Soares-Santos, N. Kuropatkin, S. Allam, D. Tucker, L. Santana-Silva, B. Yanny, P. Jethwa, K. Vivas, C. Burgad, and H.-Y. Chen (BLISS Collaboration), "A Faint Halo Star Cluster Discovered in the Blanco Imaging of the Southern Sky Survey," The Astrophysical Journal **875**, 154 (2019), [arXiv:1812.06318]
5. **S. Mau**, F. Insulla, E. E. Pickens, Z. Ding, and S. C. Dudley, "Locating a Smartphone's Accelerometer," The Physics Teacher **54**, 246 (2016)

Contributed Talks

"Searching for the Lowest Luminosity Companions of the Milky Way" 2019
New Perspectives, Batavia, IL

Contributed Posters

"Searching for the Least Luminous Satellites of the Milky Way" 2020
235th AAS Meeting, Honolulu, HI

"Measuring and Visualizing Fields and Current Flow" 2016
AAPT Summer Meeting, Sacramento, CA

"The Smart Mass" 2015
AAPT Summer Meeting, College Park, MD

"Experiment-Based Test Problems" 2015
AAPT Summer Meeting, College Park, MD

Conferences and Workshops Attended

KICP LSST Dark Matter Workshop, Chicago, IL 2019

Near-Field Cosmology with DECam, Chicago, IL 2018

DES Collaboration Meeting, Chicago, IL 2017

Mentoring

UChicago Physics Coding Club 2018–2019
Department of Physics, University of Chicago
Participant and mentor

- Assisting faculty in establishing a computational focused reading club in the UChicago physics department to cultivate familiarity with using programming for data analysis in science

Outreach

KICP Space Explorers 2018–2019
Kavli Institute for Cosmological Physics, University of Chicago
Volunteer instructor

- Facilitating the Summer and Winter Institutes at the University of Chicago and Fermilab, which provide Chicago Public Schools high school students from disadvantaged backgrounds with hands-on experience and professional development in science and technology

@rtifice 2017
Artifice NFP
Volunteer instructor

- Teaching computer science and technology to elementary school students in the South Side Chicago area

Scientific Society Membership

Undergraduate member, American Astronomical Society (AAS) 2019–present

Undergraduate member, American Physical Society (APS) 2019–present

Technical Skills

Computational: Python, C/C++, ROOT, Mathematica, Bash, LaTeX, HTML/CSS

Laboratory: soldering, debugging circuitry