

# Sidney Mau

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## EDUCATION

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

## HONORS AND AWARDS

Provost's Scholar, 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 Decaying Dark Matter
- 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,” *submitted to The Astrophysical Journal* (2019), [[arXiv:1912.03303](https://arxiv.org/abs/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,” *accepted to The Astrophysical Journal* (2019), [[arXiv:1912.03302](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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)

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#### CONTRIBUTED TALKS

“Searching for the Lowest Luminosity Companions of the Milky Way” New Perspectives, Batavia, IL	2019
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#### CONTRIBUTED POSTERS

“Searching for the Least Luminous Satellites of the Milky Way” 235th AAS Meeting, Honolulu, HI	2020
“Measuring and Visualizing Fields and Current Flow” AAPT Summer Meeting, Sacramento, CA	2016
“The Smart Mass” AAPT Summer Meeting, College Park, MD	2015
“Experiment-Based Test Problems” AAPT Summer Meeting, College Park, MD	2015

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#### 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

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#### MENTORING

<b>UChicago Physics Coding Club</b> Department of Physics, University of Chicago <i>Participant and mentor</i> <ul style="list-style-type: none"><li>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</li></ul>	2018–2019
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#### OUTREACH

<b>KICP Space Explorers</b> Kavli Institute for Cosmological Physics, University of Chicago <i>Volunteer instructor</i> <ul style="list-style-type: none"><li>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</li></ul>	2018–2019
<b>@rtifice</b> Artifice NFP <i>Volunteer instructor</i> <ul style="list-style-type: none"><li>Teaching computer science and technology to elementary school students in the South Side Chicago area</li></ul>	2017

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#### SCIENTIFIC SOCIETY MEMBERSHIP

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

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#### TECHNICAL SKILLS

Computational: Python, C/C++, ROOT, Mathematica, Bash,  $\text{\LaTeX}$ , HTML/CSS  
Laboratory: soldering, debugging circuitry