Cari Cesarotti, Ph.D.

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RESEARCH INTERESTS

I am pursuing a PhD in high energy theoretical physics with a focus on beyond the Standard Model physics. My research explores both novel models of new physics and means of detection. I am proud to be an ongoing and active member of community searching for long-lived particles at the LHC. I actively work to inform my theoretical research with experimental results.

RESEARCH EXPERIENCE

2017-22 **Graduate Student,** Center for the Fundamental Laws of Nature, Harvard University, Cambridge, MA.
Faculty Advisor: Matthew Reece, Professor.

2016-17 **Research Assistant,** NA62 Experiment, CERN, Geneva, Switzerland.
Faculty Advisor: Babette Döbrich and Tommaso Spadaro, Senior Researchers.

2014-16 **Research Assistant,** Cornell University, Ithaca, NY.
Faculty Advisors: James Alexander and Maxim Perelstein, Professors.

EDUCATION

2022* **Ph.D. in Physics,** Harvard University.
Ph.D. Advisor: Matthew Reece, Professor.

2016 **B.A. in Physics**, Cornell University.
Undergraduate Advisor: James Alexander, Professor.

TEACHING & ADVISING EXPERIENCE

Teaching Assistant

Responsibilities included writing homework solutions, grading, and holding office hours.

- *Graduate Standard Model*. Spring 2019 (taught by Matthew Reece), Harvard University.

Harvard Summer School Instructor

Responsibilities included writing and delivering 30 hours of lectures, developing and grading homework, writing student assessments.

- *Fundamentals of Particle Physics*. Summer 2018-20, Harvard University.
- *F=ma*: *Fundamentals of Physics*. Summer 2019, Harvard University.

Outreach

- **Harvard College Women in STEM Mentorship Program:** Mentored undergraduate women in physics, 2017-2020, Harvard University.
- **Science in the News:** Wrote monthly articles and delivered public colloquia about science topics, 2017-19, Harvard University.
- **Expand Your Horizons:** Performed physics demonstrations for young women interested in STEM, 2014-16, Cornell University, Ithaca, NY.
- **GIAC After School Program:** Created physics lectures and hands-on activities for weekly 2 hour afterschool program of underrepresented minority students, Fall 2015, Ithaca, NY.
- **High School Guest Lecturer:** Guest lecturer on quantum mechanics for advanced physics courses, May 2015 and Jan 2017, Naperville, IL.
- **March for Science Geneva:** Organized the March for Science, April 2017, Geneva, Switzerland.

FELLOWSHIPS & AWARDS

Fellowships

NSF Graduate Research Fellow, 2019-22.
Mainz PRISMA Cluster of Excellence Scholarship, 2017.
University of Michigan CERN REU, Summer 2016.

Academic Recognition

Theodore H. Ashford Fellowship for the Sciences, 2017-22 ($25k).
Peirce Fellowship, 2017-19 ($18k).
Cornell University Arts & Science Exceptional Senior, 2017.
Kieval Prize in Physics for Outstanding Senior, 2017.
Summa Cum Laude, 2016.
Phi Beta Kappa Honors Society, 2016.
Hunter R. Rawlings III Cornell Presidential Research Scholars, 2015-16 ($10k).
Dean's List, 2013-2016.

PROFESSIONAL SERVICE

White Papers

Contributor to three BSM physics at the LHC white papers.
Contributor to several LOIs, and speaker at several subgroup meetings of Snowmass 2021.

Professional Duties

Develop and maintain code for event isotropy.

PUBLICATIONS

Total number of publications: 10
Total number of citations: 116
h-index: 5

Publications

1. **C. Cesarotti,** M. Reece, M. Strassler

The Efficacy of Event Isotropy as an Event Shape Observable.
ArXiv: 2011.06599.

2. **C. Cesarotti,** M. Reece, M. Strassler
Spheres to Jets: Tuning Event Shapes with 5d Simplified Models.
ArXiv: 2009.08981

3. **C. Cesarotti,** J. Thaler
A Robust Measure of Event Isotropy at Colliders.
JHEP 08 (2020) 084. ArXiv:2004.06125

4. **C. Cesarotti,** Y. Soreq, M. Strassler, J. Thaler, W. Xue
Searching in CMS Open Data for Dimuon Resonance with Substantial Transverse Momentum.
Phys Rev D 100 (2019) 1, 015021. ArXiv:1902.04222

5. **C. Cesarotti,** Q. Lu, Y. Nakai, A. Parikh, M. Reece
Interpreting the Electron EDM Constraint.
JHEP 05 (2019) 059. ArXiv:1810.07736

Experimental Work

1. *Characterization and Performance of PADME's Cherenkov-Based Small-Angle Calorimeter.*
Nuclear Instruments and Methods 919 (2018) 89-97. ArXiv:1809.10840

White Papers

1. *Reinterpretation of LHC Results for New Physics: Status and Recommendation after Run 2.*
Sci Post Phys. 9 (2020) 2, 022. ArXiv:2003.07868

2. *Searching for long-lived particles beyond the Standard Model at the Large Hadron Collider.*
J Phys G 47 (2020) 9, 090501. ArXiv:1903.04497