

# Sky Cao

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CONTACT INFORMATION	School of Mathematics Institute for Advanced Study Princeton, NJ 08540	+1 (408) 373-5989 <a href="mailto:skycao@ias.edu">skycao@ias.edu</a> <a href="https://www.math.ias.edu/~skycao">https://www.math.ias.edu/~skycao</a>
RESEARCH INTERESTS	Probability, and its relations to mathematics, statistics, physics, and computer science.	
EMPLOYMENT	<b>Institute for Advanced Study</b> Member, School of Mathematics, September 2022 - current	
EDUCATION	<b>Stanford University</b> Ph.D. in Statistics, June 2022 <ul style="list-style-type: none"><li>• Advisor: Sourav Chatterjee</li></ul> <b>University of California, Berkeley</b> B.A. in Mathematics, Computer Science, May 2017 <ul style="list-style-type: none"><li>• Highest honors in mathematics, highest distinction in general scholarship</li></ul>	
PUBLICATIONS	Correlation decay for finite lattice gauge theories at weak coupling. (with Arka Adhikari) <a href="https://arxiv.org/abs/2202.10375">arXiv:2202.10375</a>  A state space for 3D Euclidean Yang-Mills theories. (with Sourav Chatterjee) <a href="https://arxiv.org/abs/2111.12813">arXiv:2111.12813</a>  The Yang-Mills heat flow with random distributional initial data. (with Sourav Chatterjee) <a href="https://arxiv.org/abs/2111.10652">arXiv:2111.10652</a>  Correlations with tailored extremal properties. (with Peter J. Bickel) <a href="https://arxiv.org/abs/2008.10177">arXiv:2008.10177</a>  Wilson loop expectations in lattice gauge theories with finite gauge groups. <i>Comm. Math. Phys.</i> , <b>380</b> , 1439–1505, 2020.  Central limit theorems for combinatorial optimization problems on sparse Erdős-Rényi graphs. <i>Ann. Appl. Probab.</i> , <b>31</b> no. 4, 1687-1723, 2021.	
INVITED TALKS	NYU Probability Seminar (December 2022) Texas Tech Probability, Differential Geometry, and Mathematical Physics Seminar (November 2022) UW Madison Probability Seminar (November 2022) Random Geometry and Statistical Physics Workshop (October 2022) Cornell Probability Seminar (May 2022) MIT Probability Seminar (April 2022) LU-NU-UMN Joint Probability Seminar (April 2022) Percolation Today Seminar (March 2022) UChicago Probability & Statistical Physics Seminar (March 2022) University of Victoria Dynamics & Probability Seminar (March 2022) ICL Stochastic Analysis Seminar (February 2022) UCLA Probability Seminar (January 2022) UC Davis Mathematical Physics & Probability Seminar (December 2021)	

IISA 2021 Conference (May 2021)  
Stanford Probability Seminar (June 2020)  
Berkeley Probability Seminar (February 2020)

CONTRIBUTED  
TALKS

Northeast Probability Seminar (November 2021)  
Bernoulli IMS One World Symposium (August 2020)

HONORS AND  
AWARDS

2022 US Junior Oberwolfach Fellow  
2021 IISA Student Paper Competition Winner  
2017 Dorothea Klumpke Roberts Prize

TEACHING

Instructor

Stats 302: Probability Qualifying Exam Workshop. Summer 2019.

TA

Stats 310A: Theory of Probability I. Fall 2021, Fall 2020, Fall 2019.

Stats 310B: Theory of Probability II. Winter 2020.

Stats 310C: Theory of Probability III. Spring 2020.

Stats 318: Modern Markov Chains. Spring 2021.

Stats 219: Stochastic Processes. Winter 2021.

Stats 217: Introduction to Stochastic Processes I. Winter 2018.

Stats 116: Theory of Probability. Spring 2019, Summer 2018.

Stats 60: Introduction to Statistical Methods: Precalculus. Summer 2021, Fall 2018,  
Fall 2017.