

# Sang-Yun Oh

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## EDUCATION

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<b>Stanford University</b> <i>Ph.D., Computational and Mathematical Engineering</i>	Stanford, CA July 2013
<b>Stanford University</b> <i>M.S., Statistics</i>	Stanford, CA December 2011
<b>University of Utah</b> <i>M.S., Computational Engineering and Science</i>	Salt Lake City, UT August 2004
<b>University of California, Berkeley</b> <i>B.A., Physics</i>	Berkeley, CA December 1999

## EXPERIENCE

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<b>Assistant Professor</b> <i>Statistics and Applied Probability Department, University of California, Santa Barbara</i>	Santa Barbara, CA July 2015 – Present
<b>Faculty Scientist</b> <i>Computational Research Division, Lawrence Berkeley National Laboratory</i>	Berkeley, CA July 2015 – Present
<b>Faculty Expert</b> <i>Google Cloud Platform, Faculty Experts Program</i>	January 2020 – Present
<b>Postdoctoral Research Fellow</b> <i>Computational Research Division, Lawrence Berkeley National Laboratory</i>	Berkeley, CA July 2013 – July 2015
<b>Research Fellow</b> <i>Simons Institute for Theory of Computing, University of California, Berkeley</i>	Berkeley, CA Fall 2013
<b>Graduate Research Assistant</b> <i>School of Medicine &amp; Statistics Department, Stanford University</i>	Stanford, CA June 2008 – July 2013
<b>Director of Analytics</b> <i>Analytics and Engineering, Interpolls, Inc.</i>	Pasadena, CA April 2005 – September 2007
<b>Graduate Research Assistant</b> <i>Scientific Computing &amp; Imaging Institute, University of Utah, Salt Lake City</i>	Salt Lake City, UT Summer 2004
<b>Instrumentation &amp; Software Engineer</b> <i>Department of Functional Imaging, Lawrence Berkeley National Laboratory</i>	Berkeley, CA August 2000 – August 2004

## PUBLICATIONS

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- Distributionally Robust Formulation and Model Selection for the Graphical Lasso, Pedro Cisneros-Velarde, **Sang-Yun Oh**, Alex Petersen, *to appear in AISTATS*, 2020
- A Scalable Sparse Cholesky-based Approach for Learning High-dimensional Covariance Matrices in Ordered Data, Kshitij Khare, **Sang-Yun Oh**, Syed Rahman, Bala Rajaratnam, *Machine Learning*, 2019, 108, 2061-2086
- Communication-Avoiding Optimization Methods for Distributed Massive-Scale Sparse Inverse Covariance Estimation, Penporn Koanantakool, Alnur Ali, Ariful Azad, Aydin Buluc, Dmitriy Morozov, Leonid Oliker, Katherine Yelick, **Sang-Yun Oh**, *Proceedings of the 21st International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2018
- Generalized Pseudolikelihood Methods for Inverse Covariance Estimation, Alnur Ali, Kshitij Khare, **Sang-Yun Oh**, Bala Rajaratnam, *Proceedings of the 20th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2017
- Communication-Avoiding Parallel Sparse-Dense Matrix-Matrix Multiplication, Penporn Koanantakool, Ariful Azad, Aydin Buluc, Dmitriy Morozov, **Sang-Yun Oh**, Leonid Oliker, Katherine Yelick, *IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, 2016

Revealing Fundamental Physics from the Daya Bay Neutrino Experiment using Deep Neural Networks, Evan Racah, Seyoon Ko, Peter Sadowski, Wahid Bhimji, Craig Tull, **Sang-Yun Oh**, Pierre Baldi, Prabhat, *International Conference on Machine Learning and Applications (ICMLA)*, 2016

A convex pseudolikelihood framework for high dimensional partial correlation estimation with convergence guarantees, Kshitij Khare, **Sang-Yun Oh**, Bala Rajaratnam, *Journal of the Royal Statistical Society: Series B (Statistical Methodology)* 77.4 (Sept. 2015) pp. 803–825., 2015

Optimization Methods for Sparse Pseudo-Likelihood Graphical Model Selection, **Sang-Yun Oh**, Onkar Dalal, Kshitij Khare, Bala Rajaratnam, *Advances in Neural Information Processing Systems (NIPS)* 27(2014) pp. 667–675., 2014

Genome-Wide Association Study of Multiplex Schizophrenia Pedigrees, D. F. Levinson, J. Shi, K. Wang, **S. Oh**, B. Riley, A. E. Pulver, D. B. Wildenauer, C. Laurent, B. J. Mowry, P. V. Gejman, M. J. Owen, K. S. Kendler, G. Nestadt, S. G. Schwab, J. Mallet, D. Nertney, A. R. Sanders, N. M. Williams, B. Wormley, V. K. Lasseter, M. Albus, S. Godard-Bauché, M. Alexander, J. Duan, M. C. O'Donovan, D. Walsh, A. O'Neill, G. N. Papadimitriou, D. Dikeos, W. Maier, B. Lerer, D. Campion, D. Cohen, M. Jay, A. Fanous, P. Eichhammer, J. M. Silverman, N. Norton, N. Zhang, H. Hakonarson, C. Gao, A. Citri, M. Hansen, S. Ripke, F. Dudbridge, P. A. Holmans, *American Journal of Psychiatry* 169.9 (Sept. 2012) pp. 963–973., 2012

Copy Number Variants in Schizophrenia: Confirmation of Previous Findings and New Evidence for 3q29 Microdeletions and VIPR2 Duplications, D. F. Levinson, J. Duan, **S. Oh**, K. Wang, A. R. Sanders, J. Shi, N. Zhang, B. J. Mowry, A. Olincy, F. Amin, C. R. Cloninger, J. M. Silverman, N. G. Buccola, W. F. Byerley, D. W. Black, K. S. Kendler, R. Freedman, F. Dudbridge, I. Pe'er, H. Hakonarson, S. E. Bergen, A. H. Fanous, P. A. Holmans, P. V. Gejman, *American Journal of Psychiatry* 168.3 (Mar. 2011) pp. 302–316., 2011

Cosmology from MAXIMA-1, BOOMERANG, and COBE DMR Cosmic Microwave Background Observations, A. H. Jaffe, P. A. R. Ade, A. Balbi, J. J. Bock, J. R. Bond, J. Borrill, A. Boscaleri, K. Coble, B. P. Crill, P. Bernardis, P. Farese, P. G. Ferreira, K. Ganga, M. Giacometti, S. Hanany, E. Hivon, V. V. Hristov, A. Iacoangeli, A. E. Lange, A. T. Lee, L. Martinis, S. Masi, P. D. Mauskopf, A. Melchiorri, T. Montroy, C. B. Netterfield, **S. Oh**, E. Pascale, F. Piacentini, D. Pogosyan, S. Prunet, B. Rabii, S. Rao, P. L. Richards, G. Romeo, J. E. Ruhl, F. Scaramuzzi, D. Sforna, G. F. Smoot, R. Stompor, C. D. Winant, J. H. P. Wu, *Physical Review Letters* 86.16 (Apr. 2001) pp. 3475–3479., 2001

Making maps of the cosmic microwave background: The MAXIMA example, R. Stompor, A. Balbi, J. D. Borrill, P. G. Ferreira, S. Hanany, A. Jaffe, A. Lee, **S. Oh**, B. Rabii, P. L. Richards, G. F. Smoot, C. D. Winant, J. H. P. Wu, *Physical Review*, D65.2, 2001

Asymmetric Beams in Cosmic Microwave Background Anisotropy Experiments, J. Wu, A. Balbi, J. Borrill, P. G. Ferreira, S. Hanany, A. H. Jaffe, A. T. Lee, **S. Oh**, B. Rabii, P. L. Richards, G. F. Smoot, R. Stompor, C. D. Winant, *The Astrophysical Journal Supplement Series*, 132.1 (Jan. 2001) pp. 1–17., 2001

MAXIMA-1: A Measurement of the Cosmic Microwave Background Anisotropy on Angular Scales of 10 arcminutes to 5 degrees, S. Hanany, P. Ade, A. Balbi, J. Bock, J. Borrill, A. Boscaleri, P. Bernardis, P. G. Ferreira, V. V. Hristov, A. H. Jaffe, A. E. Lange, A. T. Lee, P. D. Mauskopf, C. B. Netterfield, **S. Oh**, E. Pascale, B. Rabii, P. L. Richards, G. F. Smoot, R. Stompor, C. D. Winant, J. H. P. Wu, *The Astrophysical Journal* 545.1 (Dec. 2000) pp. L5–L9., 2000

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## TEACHING

**PSTAT 120B: Mathematical Statistics**, 2015-2018

**PSTAT 131/231: Statistical Machine Learning**, since 2015

**PSTAT 134/234: Statistical Data Science**, since 2018

**PSTAT 232: Computational Methods in Statistics**, since 2019

**PSTAT 262: Topics in Graphical Models**, Spring 2016

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## OPEN SOURCE SOFTWARE

gconcord: **Pseudolikelihood-based method for undirected graphical model selection** ([R package](#))

gconcordopt: **Proximal-gradient method for faster computation of CONCORD estimates** ([R package](#))

pyconcord: **Proximal-gradient method for faster computation of CONCORD estimates** ([Python package](#))

HP-CONCORD: **Massively parallel computation of CONCORD estimates** ([Source code](#))