

# Adam J. Rothman

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## CONTACT INFORMATION

Department of Statistics  
University of Michigan  
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1085 South University  
Ann Arbor, MI 48109 USA

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## RESEARCH INTERESTS

Theory, methodology, and computational algorithms for statistical problems involving high-dimensional data; Covariance estimation; Machine learning; Optimization algorithms; Multiple output regression; Multilevel models; Statistical Computing; Applications in Biology, Medicine, Engineering, and others.

## EDUCATION

### **Ph.D. Candidate in Statistics**

University of Michigan, Ann Arbor, (Expected April 2010).

- Advisors: Associate Professor Elizaveta Levina and Associate Professor Ji Zhu
- Dissertation title: "Sparse estimation of high-dimensional covariance matrices"

### **M.A. in Statistics**

University of Michigan, Ann Arbor, 2007

### **B.S.E. in Electrical Engineering** (Cum Laude)

University of Michigan, Ann Arbor, 2005  
with a minor in Mathematics

## PUBLICATIONS

**Rothman, A.J.**, Levina, E., and Zhu, J. (2009). Sparse multivariate regression with covariance estimation. Technical report #499, Dept. of Statistics, Univ. of Michigan. *Submitted*.

**Rothman, A.J.**, Levina, E., and Zhu, J. (2009). A new approach to Cholesky-based covariance regularization in high dimensions. Technical report #480, Dept. of Statistics, Univ. of Michigan. *Submitted*.

**Rothman, A.J.**, Levina, E., and Zhu, J. (2009). Generalized thresholding of large covariance matrices. *Journal of the American Statistical Association (Theory and Methods)* **104**: 177-186.

**Rothman, A.J.**, Bickel, P.J., Levina, E., and Zhu, J. (2008). Sparse permutation invariant covariance estimation. *Electronic Journal of Statistics*. **2**: 494-515. (One of four winning papers in the 2008 ASA Student Paper Competition sponsored by the Statistical Computing Section.)

Levina, E., **Rothman, A.J.**, and Zhu, J. (2008). Sparse estimation of large covariance matrices via a nested Lasso penalty. *Annals of Applied Statistics*. **2**(1): 245-263.

*(Papers are available on my website)*

## IN PREPARATION

**Rothman, A.J.** and Agarwal, D. (2009). Simultaneous dimensionality reduction and estimation of nested random effects models.

Rajaratnam, B., **Rothman, A.J.**, and Levina, E. (2009). Memory monotonic covariance models.

PROFESSIONAL  
EXPERIENCE

**Graduate Student Instructor**, University of Michigan (Jan 2006-April 2008)

- Statistics 500 *Applied Statistics I*, Winter 2007
- Statistics 412 *Introduction to Probability and Statistics*, Winter 2007
- Statistics 406, *Introduction to Statistical Computing*, Fall 2006 and Fall 2007
- Statistics 350, *Introduction to Statistics and Data Analysis*, Winter 2006, Summer 2006, Winter 2008

**Graduate Student Research Assistant**, University of Michigan (Summer 2009)

Researched multiple output regression and estimation of high dimensional covariance matrices with Associate Professor Liza Levina and Associate Professor Ji Zhu.

**Intern**, Yahoo! (Summer 2008)

Sunnyvale/Santa Clara, CA

Worked on statistical problems for web content optimization.

**Graduate Student Mentor**, University of Michigan (Fall 2007-Winter 2008)

Mentored new graduate student instructors.

**Graduate Student Research Assistant**, University of Michigan (Summer 2007)

Researched sparse covariance estimation of high dimensional covariance matrices with Dr. Liza Levina and Dr. Ji Zhu.

**Programmer**, University of Michigan (May 2006-Aug 2006)

Assisted with the computer simulations for the article “Regularized estimation of large covariance matrices” by P.J. Bickel and E. Levina published in the *Annals of Statistics* in 2008, under the direction of Dr. Liza Levina.

**Intern**, General Dynamics (May 2004 - Aug 2006)

Advanced Information Systems, Ypsilanti MI

- Wrote Matlab, C++, Perl, and MYSQL code for the implementation and testing of Automatic Target Recognition (ATR) algorithms under the direction of Dr. Daniel Berwick.
- Contributed to mathematical derivations for complex-valued covariance matrix estimation with application to channel equalization of Multiple Input, Multiple Output (MIMO) communication systems, under the direction of Dr. Mark Stuf.

**Computer Consultant II**, University of Michigan (April 2003 - April 2005)

Housing Information Technology Office

- Wrote, filmed, and edited educational television programs for ResComp TV.
- Helped solve students’ computer problems.

CONFERENCES &  
PRESENTATIONS

Poster and funded participant, Yahoo! Key Scientific Challenges Graduate Student Symposium, Sunnyvale, CA, September 2009.

Contributed talk, Joint Statistical Meetings, Washington DC, August 2009.

Invited talk, International Chinese Statistical Association Symposium, San Francisco, CA, June 2009.

Poster, Michigan Student Symposium for Interdisciplinary Statistical Sciences, Winter 2009.

Invited talk, ASA Statistical Computing and Graphics sections paper competition award session, Joint Statistical Meetings, Denver, CO, 2008.

Poster and funded participant, Isaac Newton Institute programme on Theory and Methods for Complex, High Dimensional Data. Cambridge, UK, June 2008.

Poster, Michigan Student Symposium for Interdisciplinary Statistical Sciences, Winter 2007.

Funded participant, Workshop on Geometry, Random Matrices, and Statistical Inference, SAMSI, Winter 2007.

- AWARDS
- Yahoo! PhD Student Fellowship Award (2008-2010) (One of four students nationally to win the award)
  - Student Paper Competition Award, Computing and Graphics Sections, ASA (2008)
  - National Science Foundation Travel Grant, 2008.
  - Special Mention in Teaching Award, Department of Statistics, University of Michigan, 2008.
  - Outstanding Teaching Award, Department of Statistics, University of Michigan, 2007
  - Fellowship, Department of Statistics, University of Michigan, Fall 2005.
- REFeree SERVICE
- Statistica Sinica
- OTHER SERVICE
- Session Chair, Joint Statistical Meetings, Washington DC, August 2009.
  - Organizer, Michigan Student Symposium for Interdisciplinary Statistical Sciences, Winter 2008.
- COMPUTER SKILLS
- Extensive experience with C/C++, R, and Matlab. Major experience with assembly language (mnemonic instruction set) for a Texas Instruments DSP chip.
- MEMBERSHIPS
- American Statistical Association
- OTHER ACADEMIC INTERESTS
- Electrical engineering areas including communication systems, signal processing, and electromagnetic waves.
- PERSONAL
- Born: Ann Arbor, Michigan
  - Citizenship: United States