

# Sam Cole

## Curriculum Vitae

Dept. of Mathematics,  
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### Current position

2018–present **PIMS post-doctoral fellow**, *Univ. of Manitoba*, Dept. of Mathematics.  
Project: clustering in Markov chains  
Advisor: Stephen Kirkland

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### Education

2013–2018 **Ph.D., mathematics**, *Univ. of Illinois at Chicago*, Dept. of Mathematics, Statistics, and Computer Science.  
Dissertation: “An iterative spectral approach to recovering planted partitions”  
Advisor: Shmuel Friedland

2010–2011 **M.S., mathematics**, *Univ. of Illinois at Chicago*, Dept. of Mathematics, Statistics, and Computer Science.  
Concentration: mathematical computer science

2006–2009 **B.A., mathematics**, *Oberlin College*.  
Minor: computer science

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### Papers

Recovering nonuniform planted partitions via iterated projection. *Linear Algebra and its Applications*, 576:79 – 107, 2019.

Sam Cole, Shmuel Friedland, and Lev Reyzin. A simple spectral algorithm for recovering planted partitions. *Special Matrices*, 5(1):139–157, 2017.

Sam Cole and Jamie Quadri. Selfish independent set. In *Midstates Conference for Undergraduate Research in Computer Science and Mathematics*, 2009.

Sam Cole and Yizhe Zhu. Exact recovery in the hypergraph stochastic block model: a spectral algorithm. *Linear Algebra and its Applications*, 593:45 – 73, 2020.

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### Talks, conferences, & workshops

2019 **CMS Summer Meeting**, *Univ. of Regina*, Matrix theory session.  
Contributed talk: “Spectral recovery of stochastic block models on graphs and hypergraphs”

2018 **MSRI Summer School: Representations of High-Dimensional Data**, *Mathematical Science Research Institute*.

- 2017 **Meeting of the International Linear Algebra Society**, *Iowa State Univ.*, Mini-symposium on random matrix theory.  
Invited talk: “A simple algorithm for spectral clustering of random graphs”
- 2017 **Gene Golub SIAM Summer School**, *Akademie Berlin-Schmöckwitz*.
- 2017 **SIU Mathematics Conference**, *Southern Illinois Univ. Carbondale*, Special session on matrix theory, computation, and applications.  
Invited talk: “A simple spectral algorithm for recovering planted partitions”
- 2017 **Numerical Analysis Seminar**, *Univ. of Texas at Austin*.  
Invited talk: “A simple algorithm for spectral clustering of random graphs”
- 2017 **Scientific and Statistical Computing Seminar**, *Univ. of Chicago*.  
Invited talk: “A simple algorithm for spectral clustering of random graphs”
- 2016 **Graduate Research Workshop in Combinatorics**, *Univ. of Wyoming*.
- 2016 **Combinatorial and Additive Number Theory**, *CUNY Graduate Center*.  
Contributed talk: “Planted partitions in random graphs”
- 2016 **Optimization and Parsimonious Modeling**, *Institute for Mathematics and its Applications, Univ. of Minnesota*.  
Poster: “A Simple Spectral Algorithm for Recovering Planted Partitions” (presented by Shmuel Friedland)

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## Teaching

- 2018–present **Lecturer**, *Univ. of Manitoba*.  
Courses:
  - Calculus I & II
  - Beginning linear algebra
- 2010–2011; 2013–2018 **Teaching assistant**, *Univ. of Illinois at Chicago*.  
Selected courses:
  - Precalculus
  - Calculus
  - Introduction to programming in Python
  - Data structures in C++
- 2016 **Graduate mentor**, *Univ. of Illinois at Chicago*, Mathematical Computing Laboratory.  
Project: random geometric graphs
- 2015–2016 **Lecturer**, *Univ. of Illinois at Chicago*.  
Courses:
  - Multivariable calculus
  - Mathematical Computing Laboratory summer high school workshop in graph theory
- 2008–2009 **Grader/lab assistant**, *Oberlin College*.  
Courses:
  - Linear algebra (grader)
  - Introduction to computer science I & II (grader and lab assistant)

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## Awards

- 2011 **Graduate Student Teaching Award**, *Univ. of Illinois at Chicago*, Dept. of Mathematics, Statistics, and Computer Science.

———— Industry experience

2012 **Software engineer**, *Datalogics, Inc.*

———— Programming languages & software

C, C++, Git, HTML/CSS, Java, JavaScript, MATLAB, Python, SciPy