

GRETHE HYSTAD

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Education

- Ph.D.** Mathematics, December 2009, University of Arizona, Tucson, AZ
Periodic Ising Correlations
Advisor: Prof. John N. Palmer
- M.S.** Mathematics, May 2006, University of Arizona, Tucson, AZ
Sum of lowest eigenvalues of the Discrete Laplacian
Advisor: Prof. Daniel Ueltschi
- Candidata Magisterii** (B.S. equivalent) Mathematics, Fall 2000, University of Oslo, Oslo, Norway
- Three-year degree in Medical Laboratory Technology** Medical Laboratory Technology, Spring 1999, Østfold University College, Fredrikstad, Norway

Employment

- August 2014-Present Lecturer, University of Arizona (UA)
- January 2010-August 2014 Instructor, University of Arizona (UA)
- August 2003-January 2010 Graduate Teaching Associate/Assistant, University of Arizona
- August 2002-May 2003 Teaching Assistant, University of Oslo (UiO), Norway

Funded Proposals/Grants

- * Online Education Project (OEP) 2014, University of Arizona, \$10,000. In support of the online course development for math 509C, Statistics for Research, Spring 2014-Spring 2015
- * Research grant, Carnegie Institution of Washington, 50% of salary for 2015
- * Research grant, Keck Foundation (1.3 million dollars for 3 years). For 2015, I receive one month Summer support

Travel Grants

- * UA Department of Mathematics, \$567. AMATYC Southwest Regional Conference, Flagstaff, AZ, June 2013
- * UA Department of Mathematics, \$800. Joint Mathematics Meetings, Boston, MA, January 2012
- * UA Department of Mathematics, \$250. Joint Mathematics Meetings, Washington D.C., January 2009

Publications

6. Hazen, R. M., Grew, E. S., Downs, R. T., Golden, J., Hystad, G., and Sverjensky, D. A. (2014). Mineral Ecology: Chance and Necessity in the Mineral Diversity of Terrestrial Planets. *Canadian Mineralogist*. Accepted. INVITED.
5. Hazen, R. M., Liu, X. M., Downs, R. T., Golden, J., Pires, A. J., Grew, E. S., Hystad, G., Estrada, C., and Sverjensky, D. A. (2014). Mineral Evolution: Episodic Metallogenesis, the Supercontinent Cycle, and the Coevolving Geosphere and Biosphere. *Society of Economic Geologists Special Publication*, 18, 1-15. INVITED. http://www.geo.arizona.edu/xtal/group/pdf/SEGSP18_1.pdf
4. Golden, J., McMillan, M., Downs, R. T., Hystad, G., Goldstein, I., Stein, H. J., Zimmerman, A., Sverjensky, D. A., Armstrong, J. T., and Hazen, R. M. (2013). Rhenium variations in molybdenite (MoS_2): Evidence for progressive subsurface oxidation. *Earth and Planetary Science Letters*, 366: 1-5. http://www.geo.arizona.edu/xtal/group/pdf/EPSL366_1.pdf
3. Hazen, R. M., Golden, J., Downs, R. T., Hystad, G., Grew, E. S., Azzolini, D., and Sverjensky, D. A. (2012). Mercury (Hg) mineral evolution: A mineralogical record of supercontinent assembly, changing ocean geochemistry, and the emerging terrestrial biosphere. *American Mineralogist*, 97: 1013-1042. http://www.geo.arizona.edu/xtal/group/pdf/AM97_1013.pdf
2. Hystad, G. (2011). Periodic Ising Correlations. *J. Math. Phys.*, 52, Issue 1, 013302. <http://arxiv.org/abs/1011.2223>
1. Palmer, J. and Hystad, G. (2010). Spin matrix for the scaled periodic Ising model. *J. Math. Phys.*, 51, Issue 12, 123301. <http://arxiv.org/abs/1008.0352>

In Preparation/Submitted papers

3. Hystad, G., Downs, R. T., and Hazen, R. M. (2014). Mineral frequency distribution data conform to a LNRE model: Prediction of Earth's "missing" minerals. In review.
2. Hystad, G., Downs, R. T., Grew E. S., and Hazen, R. M. (2014). The search for "Earth-like" planets: Earth is mineralogically unique. In preparation.
1. Hazen, R. M., Grew E. S., Downs, R. T., and Hystad, G. (2014). The "missing" minerals of beryllium. In preparation.

Published Abstracts

- * Hazen, R. M., Grew, E. S., Downs, R. T., Golden, J., Hystad, G., and Sverjensky, D. A. Geochemical Society Ingerson lecture: Chance and Necessity in the Mineral Diversity of Terrestrial Planets. 2014 GSA Annual Meeting in Vancouver, British Columbia, October 19-22, 2014, Geological Society of America Abstracts with Programs. Vol. 46, No. 6, p.413.
- * Hazen, R. M., Downs, R. T., Golden, J., Hystad, G., and Grew, E. S. Planetary Stoichiometry, Mineral Ecology, and the Rise of Habitability. American Geophysical Union Fall meeting, San Francisco, December 15-19, 2014. <https://agu.confex.com/agu/fm14/webprogrampreliminary/Paper15959.html>

- * Hystad, G. Supplemental Instruction in Precalculus. Joint Mathematics Meetings, MAA General Contributed Paper Session on Teaching Introductory Mathematics, Baltimore, MD, January 15-18, 2014. http://jointmathematicsmeetings.org/meetings/national/jmm2014/2160_presenters.html
- * Hystad, G. Periodic Ising model and Ising Correlations. Joint Mathematics Meetings, AMS Contributed Paper Session on Mechanics and Mathematical Physics, II, Boston, MA, January 4-7, 2012. http://jointmathematicsmeetings.org/meetings/national/jmm2012/2138_presenters.html

Presentations

- * *A Brief Overview of Teaching and Learning Online* (with G. Gibbs). Mathematics Instruction Colloquium, UA, April 2014
- * *Problem Solving for Precalculus*. Mathematics Educator Appreciation Day Conference, Tucson, AZ, January 2014
- * *Precalculus as an inquiry based course*. AMATYC Southwest Regional Conference, Flagstaff, AZ, June 2013
- * *Precalculus supplemental instruction seminar: Math 196L* (with D. Wood). Mathematics Instruction Colloquium, UA, February 2012
- * *Periodic Ising model and Ising Correlations*. Joint Mathematics Meetings, AMS Contributed Paper Session on Mechanics and Mathematical Physics, II, Boston, MA, January 2012
- * *The Periodic Ising Model*. Applied Mathematics Colloquium, Illinois Institute of Technology, Chicago, IL, March 2011
- * *Periodic Ising Correlations*. Mathematical Physics Seminar, UA, October 2009
- * *Ising Model and Ising Correlations*. Graduate Student Mathematics Colloquium, UA, October 2008
- * *Ising Correlations*. Mathematical Physics Seminar, UA, April 2008
- * *The Strong Szegő limit theorem*. Graduate Student Mathematics Colloquium, UA, January 2007
- * *The Discrete and Continuum Laplacian*. Recruitment Workshop, UA, March 2006
- * *The Discrete Laplacian*. Graduate Student Mathematics Colloquium, UA, April 2005

Colloquium Organization and Chaired Sessions

- * Organizing the **Mathematics Instruction Colloquium**. Bi-weekly talks on topics related to the teaching of mathematics; Bi-weekly reading groups on topics related to the scholarship of teaching and learning. <http://math.arizona.edu/~mathinst>
UA, Fall 2013-Present
- * Chair of the AMS Contributed Paper Session on Mechanics and Mathematical Physics, II, Joint Mathematics Meetings, Boston, MA, January 2012

Teaching Awards

- * Outstanding Graduate Teaching Assistant Award, Fall 2009

Teaching Experience

* Courses taught at the University of Arizona:

- Statistics for Research, math 509C (one time)
- Introduction to Probability Theory, math 362 (five times)
- Discrete Mathematics in Computer Science, math 243 (four times)
- Statistics for Teaching, math 361 (two times)
- Introduction to Statistics and Biostatistics, math 263 (one time)
- Calculus Concepts for Business Majors, math 116 (two times)
- Precalculus Supplemental Instruction Seminar, math 196L (four times)
- Basic Statistics, math 163 (one time)
- Calculus I with Applications, math 124 (five times)
- Calculus II, math 129 (three times)
- Calculus Preparation, math 120R (two times)
- Plane Trigonometry, math 111 (two times)
- Elements of Calculus, math 113 (one time)
- College Algebra (in class and online), math 112 (three times)
- College Algebra, math 110 (four times)

* Recitation sessions:

Duties included leading recitation sessions, grading exams and quizzes, tutoring in Departmental tutoring lab.

- Introduction to Ordinary Differential Equations at UA (two times)
- Discrete Mathematics at UiO (one time)
- Introductory Course in Theoretical Mathematical Analysis at UiO (one time)

* Teaching Assistant:

Duties included holding office hours.

- Formal Mathematical Reasoning and Writing at UA (two times)

Course Development and Instructional Material

- * Writing of the *Tutorial for the integration of the software, R, with introductory statistics*. This is a tutorial that I wrote for the course Statistics for Research, math 509C, for Spring 2014. math.arizona.edu/~ghystad
- * Online lecture notes for the course Introduction to Probability Theory, math 362.
- * Online lecture notes for the course Statistics for Teaching, math 361.
- * Online lecture notes for the course Calculus Concepts for Business Majors, math 116.
- * Helped with creating problems and teaching the course Precalculus Supplemental Instruction Seminar, math 196L.

University or Community Service

- * Mathematics Coordinator for the New Start Summer Program, UA, Summer 2012 and Summer 2013
- * Instructor for the New Start Summer Program, UA, Summer 2010 and Summer 2011
- * Presenting Calculus problems for a High School class, Tucson, AZ, February 2009

Classroom Supervision/Mentoring/Advising

- * Supervisor for Graduate Teaching Assistants, UA, Fall 2010, Fall 2011, Spring 2012, Fall 2012, Spring 2013, Fall 2013, Fall 2014
- * Supervisor for an Undergraduate Teaching Assistant, UA, Spring 2011
- * Research Mentor for Mathematical Modeling Course, Predator-Prey modeling, UA, Spring 2007

Conference, Meeting & Workshop Participation

- * Workshop on Scholarship of Teaching and Learning (SoTL): Turning Teaching Problems into Research, Tucson, AZ, May 2013
- * AMATYC Southwest Regional Conference, Flagstaff, AZ, June 2013
- * Joint Mathematics Meetings, Boston, MA, January 2012
- * Joint Mathematics Meetings, New Orleans, LA, January 2011
- * Joint Mathematics Meetings, San Francisco, CA, January 2010
- * Joint Mathematics Meetings, Washington D.C., January 2009
- * AMS Section Meeting, Tucson, AZ, April 2007

Society Membership

- * American Mathematical Society

Computer Skills

- * R, basic SAS, basic HTML, \LaTeX , Linux/Unix.

Press Release

- * June 25, 2012, Science Daily, [Mercury Mineral Evolution Tied to Supercontinent Assembly Over Last 3 Billion Years](#)
- * April 1, 2014, Arizona Daily Star, [Sahuarita, Oro Valley are safest towns in AZ, maybe](#)