

Gregory Henselman

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PhD Candidate, University of Pennsylvania

EDUCATION

- 2011 – 2017 **PhD Electrical & Systems Engineering**, *School of Engineering & Applied Science*, University of Pennsylvania, USA. Home: <http://www.ease.upenn.edu>.
- 2010 – 2011 **MS Mathematics**, *Department of Mathematics*, University of Oregon, USA. Home: <http://math.uoregon.edu>.
- 2010 **BA Mathematics & Classical Studies**, *Magna Cum Laude*, Willamette University, USA. Home: <http://www.willamette.edu>.

RESEARCH & TEACHING

- Research Algebraic combinatorics, Computational topology, Discrete optimization, Topological data analysis.
- Teaching Educational testing & measurement, adaptive methods for ADHD, media-aided design.
- 2015 Teaching Assistant. *Decision Models*, Coursera. Supervised by Rakesh Vohra.
- 2014 Teaching Assistant. *Calculus: Single Variable*, Coursera. Supervised by Robert Ghrist.
- 2010-2011 Instructor of Record. Math 111 *Precalculus* and Math 251 *Introduction to Calculus*.

EMPLOYMENT

- 2012 *Intern*, United Technologies Research Center.
- 2010 – 2011 *Graduate Teaching Fellow*, University of Oregon.

PUBLICATIONS

- 2016 *Matroid Filtrations and Computational Persistent Homology*, Technical Report
- 2014 *Combinatorial invariants of multidimensional topological network data*, IEEE Global Signal & Information Processing Symposium.

TALKS

- January 2017 Joint Math Meetings, *The Combinatorial Linear Chain Complex*
- June 2016 Institute for Advanced Study, *Möbius Inversion, Morse Theory, and Homological Persistence*, Institute for Advanced Study
- January 2016 Joint Math Meetings, *Matroids, Morse Theory, and Fast Persistent Homology Computations*
- November 2015 Rutgers U., *A Morse-Theoretic Algorithm to Compute Persistent Homology, with Generators*
- October 2015 Lehigh U., *Cellular Matroids & Applications*
- September 2015 Columbia U., *Data, Algorithms, and Problems on Graphs, A novel algorithm for persistent homology, with applications to neuroscience*
- September 2015 Oxford U., *Computational Algebraic Topology School, Basic Persistence: Matroids and Morse Theory for Spaces with Big Cliques*

- February 2015 U. Pennsylvania Applied Topology Seminar, *Cellular matroids & Topological Data Analysis*.
- December 2014 IEEE Global Signal & Information Processing Symposium, *Combinatorial Invariants of Multidimensional Topological Network Data (poster)*.
- November 2014 U. Pennsylvania Mathematics Student Seminar, *Introduction to matroids & applications*.
- February 2014 U. Pennsylvania ESE Department Seminar, *Duality for Nonlinear Flows: Maxwell's Equations and Beyond*.
- July 2012 United Technologies Research Center, *Sheaves & Applications*.
- June 2011 U. Oregon, WETSK. *Euler Integration and the Euler-Bessel/Euler-Fourier Transforms*.
- May 2011 U. Oregon, Homotopy Seminar. *Persistent Homology and Data Analysis*.
- April 2011 Willamette U., Colloquium. *Topological Robotics: Theorems & Examples*.
- January 2010 U. Oregon, Homotopy Seminar. *Homological Approachs to Network Coverage*.
- May 2008 Willamette U., Presidential Thesis Defense. *Deterministic Generation of Three-Regular Graph Representations for One-Face Maps*.

AWARDS

- 2009 Charles W. & Elizabeth H. Curtis Scholarship (Mathematics)
- 2009 M. Glockers Garner Award
- 2008 Phi Beta Kappa
- 2007 Presidential Research Grant (Willamette University, Mathematics)
- 2006 Willamette University Class of 1965 Scholarship
- 2004 Honors at Entrance, Willamette University

SERVICE

- Workshop Leader, Graduate Teaching Assistant Training, University of Pennsylvania Center for Teaching and Learning
- Founder/Coordinator, Graduate Student Seminar, Electrical/Systems Engineering Department
- Volunteer Coordinator, FIRST LEGO League Championship

PROFESSIONAL MEMBERSHIPS

- American Mathematical Society
- Institute of Electrical and Electronics Engineers
- Association for Women in Mathematics

REFERENCES

Professor Robert Ghrist

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UPDATED

January 2015