

## LUBOS THOMA

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### Current appointment

Associate professor, University of Rhode Island, Department of Mathematics and Applied Mathematical Sciences, Kingston RI, USA

### Education

Emory University, Department of Mathematics and Computer Science, Atlanta GA  
Ph.D. in Mathematics, 1996  
Advisor: Prof. V. Rödl

Czech Technical University, Faculty of Nuclear Sciences and Physical Engineering, Prague, Czech Republic  
M.S. in Applied Mathematics, 1988  
Honors: Rector's Prize, graduated with distinction

### Research interests

probability and random structures, extremal graph and hypergraph theory, and applications

### Awards / grants

- Collaboration for Exploration in Mathematics and Science (CEMS) at URI grant, *Improvement of Online PCE Project for MTH131*, principal investigators: L. Thoma, L. Wu, \$2,000, Summer 2014
- Collaboration for Exploration in Mathematics and Science (CEMS) at URI grant, *Online Pre-Calculus Implementation for Calculus*, principal investigators: L. Thoma, L. Wu, \$7,200, Summer 2013
- Gateway Grant, Provost Office URI, *A New Program for Use of Computer Algebra Systems in Calculus at URI*, principal investigators: J. Baglama, T. Bella, M. Orlando, L. Pakula, L. Thoma, \$13,900, Summer 2012
- URI Foundation grant, *Online General Education Math Courses*, principal investigators: J. Baglama, L. Thoma, L. Wu, \$3,470, Summer 2012
- University of Rhode Island Foundation, *URI Calc-Bowl* grant, principal investigators:

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October 2021

J. Baglama, L. Thoma, L.Wu, \$ 3,000 (2008-2011)

• Career Enhancement Grant, URI Council of Research, *Simulation of random structures and processes*, \$ 7700.00 (2005)

• NSF Research grant, DMS-0301228, principal investigator, *Extremal and Probabilistic Combinatorics*, \$ 14,538 (2002-2003) (transfer of Research grant, DMS-9970622)

NSF Research grant, DMS-9970622, principal investigator, *Extremal and Probabilistic Combinatorics*, \$ 80,000 (1999-2002)

• NSF U.S.-Brazil cooperative research grant, INT-0072064, co-principal investigator, *Problems on Random Graphs (Structures) and Set Systems*, \$ 20,000 (2000-2002)

## Publications

- [1] V. Rödl, L. Thoma, *The Complexity of Cover Graph Recognition for Some Varieties of Finite Lattices*, Order **12**, 351–374 (1995).
- [2] V. Rödl, L. Thoma, *Asymptotic Packing and the Random Greedy Algorithm*, Random Structures & Algorithms **8**(3), 161–177 (1996).
- [3] T. Luczak, L. Thoma, *Convergence of Probabilities for the Second Order Monadic Properties of a Random Mapping*, Random Structures & Algorithms **11**, 277–295 (1997).
- [4] V. Rödl, L. Thoma, *On the Size of Set Systems on  $[n]$  Not Containing Weak  $(r, \Delta)$ -Systems*, Journal Combinatorial Theory A **80**(1), 166–173 (1997).
- [5] A. Frieze, M. Karonski, L. Thoma, *On Perfect Matchings and Hamiltonian Cycles in Sums of Random Trees*, SIAM J. Discrete Math. **12**(2), 208–216 (1999).
- [6] J. Spencer, L. Thoma, *On the Limit Values of Probabilities for the First Order Properties of Graphs*, in: R. Graham, J. Kratochvíl, J. Nešetřil, F. Roberts (eds.), Contemporary Trends in Discrete Mathematics, Proceedings of the DIMATIA-DIMACS Conference “On the Future of Discrete Mathematics”, AMS Series in Discrete Mathematics, Volume 49 (1999), 317–336.
- [7] T. Bohman, A. Frieze, M. Ruszinkó, L. Thoma, *Vertex covers by edge disjoint cliques*, Paul Erdős and his mathematics (Budapest, 1999), Combinatorica **21**(2), 171–197 (2001).
- [8] T. Bohman, A. Frieze, M. Ruszinkó, L. Thoma, *A note on sparse random graphs and cover graphs*, The Electronic Journal of Combinatorics **7**(1), R19 (2000).
- [9] A. Frieze, M. Ruszinkó, L. Thoma, *A note on random minimum length spanning trees*, The Electronic Journal of Combinatorics **7**(1), R41 (2000).
- [10] T. Bohman, A. Frieze, M. Ruszinkó, L. Thoma, *G-intersecting families*, Combinatorics, Probability, and Computing **10**, 367–384 (2001).
- [11] Y. Kohayakawa, V. Rödl, L. Thoma, *An optimal algorithm for checking regularity (Extended abstract)*, Proceedings of the 13th Annual ACM-SIAM Symposium on Discrete Algorithms, San Francisco CA, 277–286 (2002).
- [12] Y. Kohayakawa, V. Rödl, L. Thoma, *An optimal algorithm for checking regularity*, SIAM Journal on Computing **32**(5), 1210–1235 (2003).

- [13] J. Skokan, L. Thoma, *Bipartite subgraphs and quasi-randomness*, Graphs and Combinatorics **20**(2), 255–262 (2004).
- [14] V. Rödl, L. Thoma, *On Cover Graphs and Dependent Arcs in Acyclic Orientations*, Combinatorics, Probability, and Computing **14** (2005), no. 4, 585–617.
- [15] B. Kaskosz, L. Thoma, *Lower Bounds for Integral Functionals Generated by Bipartite Graphs*, Czechoslovak Mathematical Journal, vol. 69 (144), no. 2 (2019), pp. 571–592.
- [16] E. Bertrand, D. McArdle, L. Thoma, L. Wu, *Implementing Online Programs in Gateway Mathematics Courses for Students with Prerequisite Deficiencies*, PRIMUS Journal (Problems, Resources, and Issues in Mathematics Undergraduate Studies), 2019, pp. 1–16, doi.org/10.1080/10511970.2019.1629556
- [17] M. Krul, L. Thoma, *2-Colorability of  $r$ -Uniform Hypergraphs*, Electronic Journal of Combinatorics, vol. 26 (3) (2019), article P3.30

### Other

- [a] W. Kook, L. Thoma, *Unsigned reduced Euler characteristic for the matroid complex of cycle matroid for complete bipartite graph  $K_{n,n}$* , ID Number: A072962, The On-Line Encyclopedia of Integer Sequences by N. J. A. Sloane (<http://www.research.att.com/~njas/sequences/index.html>) (2002).
- [b] N. Eaton, W. Kook, L. Thoma, *Number of spanning trees in  $K_n - e$ , the complete graph on  $n$  nodes minus an edge ( $n > 1$ )*, ID Number: A071720, The On-Line Encyclopedia of Integer Sequences by N. J. A. Sloane (<http://www.research.att.com/~njas/sequences/index.html>) (2004).
- [c] N. Eaton, W. Kook, and L. Thoma, *Number of spanning trees in the graph  $K_n/e$ , which results from contracting an edge  $e$  in the complete graph  $K_n$  on  $n$  vertices ( $n \geq 2$ )*, ID Number: A089104, The On-Line Encyclopedia of Integer Sequences by N. J. A. Sloane (<http://www.research.att.com/~njas/sequences/index.html>) (2004).

### Selected talks / Lectures

Selected talks at conferences and seminars including invited talks:

- Special Session on New Developments in Graphs and Hypergraphs, American Mathematical Society Meeting # 1121, Bowdoin College, Brunswick ME, *invited*, September 2016
- Combinatorics seminar, *invited*, University of Illinois Urbana-Champaign, October 2013
- Minisymposium on Coding Theory and Geometry, *invited*, SIAM Conference on Applied Algebraic Geometry, Colorado State University, August 2013
- Mathematica for Bioinformatics, workshop at the College of Pharmacy, University of Rhode Island, June 2013
- Special Session on Graphs, Hypergraphs, and Counting, American Mathematical Society Meeting # 1090, Iowa State University, Ames IA, *invited*, April 2013
- Seminar (*invited*), Center for Combinatorics, Nankai University, Tianjin, China, June 2009
- CDAM Lunchtime Seminar (*invited*), Department of Mathematics, London School of Economics and Political Science, London UK, February 2008

Noon Seminar, Department of Applied Mathematics, Charles University, Prague,  
February 2008

Combinatorics Seminar (undergraduate), Department of Applied Mathematics,  
Charles University, Prague, February 2008

Sixth Czech-Slovak International Symposium on Combinatorics, Graph Theory,  
Algorithms and Applications, Charles University, Prague, July 2006

Special Session in Extremal Combinatorics at the AMS 2003 Central Section Meeting (#985)  
(*invited*), Bloomington IN, April 2003

The 13th Annual ACM-SIAM Symposium on Discrete Algorithms (*invited*),  
San Francisco CA, January 2002

Combinatorics seminar, University of Illinois at Urbana-Champaign, September 2000

Combinatorics seminar, Faculty of mathematics and physics, Charles University, Prague,  
July 2000

Tenth SIAM Conference on Discrete Mathematics, Minneapolis MN, June 2000

9th Quadrennial Intl. Conf. on Graph Theory, Combinatorics, Algorithms and Appl.,  
Western Michigan University, June 2000

Special Session in Graph Theory, AMS meeting 954, University of Louisiana at Lafayette,  
April 2000

ACO seminar, Carnegie Mellon University, October 1999

Combinatorics seminar, Emory University, September 1999

Special session, AMS meeting 941, University of Illinois at Urbana-Champaign, March 1999

Logic seminar, Carnegie Mellon University, February 1999

DIMACS/IAS Workshop on Randomized and Derandomized Algorithms for Disc. Struct.,  
Institute for Advanced Study, Princeton NJ, November 1998

Colloquium, Emory University, October 1998

Discrete Mathematics Seminar, Princeton University, May 1998

Special session, AMS meeting 931, University of Louisville, March 1998

Combinatorics seminar, University of Memphis, February 1998

Combinatorics and Computational Complexity Seminar, Institute for Advanced Study,  
Princeton NJ, October 1997

Special Year on Logic and Algorithms - One Year Later Workshop, DIMACS,  
Rutgers University, July 1997

Seminar on Discrete Probability, DIMACS, Rutgers University, May 1997

Combinatorics and Complexity Seminar, Institute for Advanced Study, Princeton NJ,  
March 1997

Combinatorics seminar, University of Pennsylvania, February 1997

Banach Center Minisemester on Selected Topics in Discrete Mathematics, Stefan Banach  
International Mathematical Center, Warsaw, Poland, September 1996

Combinatorics seminar, Emory University, October, 1996

Bell Labs (DIMACS Mixer), Murray Hill NJ, October 1996

Special session, AMS meeting 906, Univ. of North Carolina at Greensboro, November 1995

The 7th International Conference on Random Structures and Algorithms,  
Emory University, May 1995  
Combinatorics seminar, Georgia Institute of Technology, April 1995  
The 8th Cumberland Conference on Graph Theory, Combinatorics, and Computing,  
Vanderbilt University, April 1995  
International Conference on Combinatorics, Graph Theory and Computing,  
Florida Atlantic University, March 1995

### **Conferences organizing committees**

*Discrete Mathematics Days of the Northeast*, University of Rhode Island, September 29, 2018,  
with M. Barrus (URI), W. Kinnersley (URI), N. Eaton (URI),  
[www.math.uri.edu/~billk/DMD/index.html](http://www.math.uri.edu/~billk/DMD/index.html)

*Regularity for hypergraphs*, The Banff International Research Station, Banff Canada, May  
10 - 24, 2003, with P. Haxell (U. Waterloo), V. Rodl (Emory U.), J. Skokan (U. Illinois at  
Urbana-Champaign), [www.pims.math.ca/birs/workshops/2003/03frg004/](http://www.pims.math.ca/birs/workshops/2003/03frg004/)

*New England Discrete Mathematics Day at URI*, University of Rhode Island, February 1,  
2003, with W. Kook (URI), N. Eaton (URI), [www.math.uri.edu/~thoma/DM/](http://www.math.uri.edu/~thoma/DM/)

### **Students**

#### **Graduate (major professor):**

Michael Krul, Ph.D., University of Rhode Island, 2013  
thesis: Hypergraph colorings, commutative algebra, and Groebner bases

Zachary Kudlak, Ph.D., University of Rhode Island, 2010  
thesis: Problems in generalized graph colorings

directing M.S. degree papers: A. Armstrong (Fall 2011), M. Krul (Spring 2010), E. Glatt  
(Spring 2007), S. Ingalls (Spring 2006), Z. Kudlak (Spring 2006), R. Varon (Spring 2006)

#### **Undergraduate Honors projects and independent studies:**

Ryan Geib, honors project (with Y. Zhang (CELS URI)): *Do Metabolic Networks Follow a  
Power Law? A PSAMM Analysis*, Spring 2019

Jake Smith, graduate independent study (mth591): *Computational topology and topological  
data analysis*, Spring 2018

Alex Geremia, independent study: *Predicting bond price sensitivity due to changes in interest  
rates*, Spring 2015

Frank Palladino, honors project: *Analytic and combinatorial number theory*, Fall 2006 –  
Spring 2007

Kristopher Attwood, independent study: *Coding and information theory*, Fall 2004

Shad Ahmed, honors project: *Number theory and cryptography*, Summer 2004

## Other professional activities

### Refereeing for journals

Random Structures & Algorithms  
Journal of Symbolic Logic  
SIAM Journal on Discrete Mathematics  
Journal of Graph Theory  
Moscow Journal of Combinatorics and Number Theory  
Ars Mathematica Contemporanea  
Integers: The Electronic Journal of Combinatorial Number Theory  
Discrete Mathematics  
Information and Computation  
Journal of Combinatorial Mathematics and Combinatorial Computing

### Membership in professional organizations

American Mathematical Society  
Association of Members of the Institute for Advanced Study

## Selected service and curriculum development at the University of Rhode Island

- director of the graduate program in mathematics: since Spring 2021
- organizing Discrete Mathematics Seminar: since Spring 2006;  
[math.uri.edu/~thoma/dmg/dmg.html](http://math.uri.edu/~thoma/dmg/dmg.html)
- created a joint Applied Mathematics/Finance BS degree with a focus on actuary science. Organized professional actuary days at URI and actuary program trips to PriceWaterhouse-Coopers (PwC) in NYC (Fall 2016, Fall 2017).
- organizing (with J. Baglama, T. Bella, V. Perovic, L. Wu) URI Calc-Bowl Mathematics Competition since Spring 2007 funded by the URI Foundation, John Wiley and Sons Inc., College of Arts & Sciences URI, Pi Mu Epsilon URI Chapter, Department of Mathematics URI, Belmont Fruit Market. [www.math.uri.edu/calcbowl](http://www.math.uri.edu/calcbowl)
- Data Science Collaborative: member of the Data Science Collaborative advisory board 2015–Fall 2020; member of the Data Science Graduate Programs Curriculum Committee 2018–Fall 2020; member of the Data Science Undergraduate Programs Curriculum Committee 2015–2018
- served on over 30 Ph.D and M.S. degree committees as committee member and committee chair
- member of the graduate committee: since Spring 2002
- developed courses: AMS528 Applied topology MTH656 Probability on discrete structures, MTH453 Introduction to stochastic processes, MTH180 Mathematical tools for computing
- member of the Graduate Council: 2013-2016
- organized the Putnam competition at URI and the Putnam seminar: 2003–2008
- member of the Outcomes Assessment Group: Spring 2005 – Fall 2006