CURRICULUM VITAE
Linyuan Lu

(April 9, 2019)

Department of Mathematics
University of South Carolina
Columbia, SC 29208
USA

Phone: (803) 576-5822 (O)
(803) 781-8457 (H)
E-mail: lu@math.sc.edu
http://people.math.sc.edu/lu/

RESEARCH INTERESTS

Large information networks, probabilistic methods, spectral graph theory, random graphs, extremal problems on hypergraphs and posets, algorithms, and graph theory.

EDUCATION

Ph. D. in Combinatorics, December 2002.
Thesis title: *Probabilistic methods in massive graphs and Internet computing;*
Supervised by Professor Fan Chung Graham.
University of California at San Diego, La Jolla, CA.

M. S. in Computer Science (5/99), M. S. in Mathematics (8/99).
University of Pennsylvania, Philadelphia, PA.

B. S. in Mathematics (7/91).
Nankai University, Tianjin, China.

POSITIONS

Department Chair, Department of Mathematics, University of South Carolina,   (07/2018–present)
Full professor, Department of Mathematics, University of South Carolina,   (01/2013–present)
Associate professor, Department of Mathematics, University of South Carolina, (08/2009–12/2012)
Assistant professor, Department of Mathematics, University of South Carolina, (08/2004–08/2009)
Postdoc, Department of Mathematics, University of California, San Diego,   (10/2002–08/2004)

AWARD

Receiving a prize of $100 from Ron Graham on December 8, 2007 for settling a twenty-years-old Erdős prized problem.

SUMMARIES

Publications: 1 book, 2 book chapters, 55 Journal papers, 13 conference papers, and 15 preprints.
Presentations: Four Lecture Series: six 60-minute talks, five 90-minute talks, fourteen 90-minute talks, six 90-minute talks. Thirty-eight 50-minute invited talks, forty-eight 25-minute invited conference talks, 5 contributed talks, and 37 local seminar talks.
Grants: ONR N00014-17-1-2842, NSF DMS-1600811, NSF DMS-1300547, ONR N00014-13-1-0717, NSF DUE-CCLI-1020692, NSF DMS-1000475, and NSF DMS-0701111.
Editorial board: Order (01/16 – present), *Managing editor* (07/09 – 01/13) and editor (01/13 – present) for the Journal of Combinatorics.
Services: Serving in an NSF panel, organizing 7 sections/conferences, reviewing 12 NSF/NSA grants, and refereeing 72 papers in 25 Journals/conferences.
Supervision: four finished Ph. D. student, three current Ph. D. students, two finished Master students, four visiting students, three (other) co-authored students, and two undergraduate students.

PUBLICATIONS

(a) Books

1. Fan Chung and Linyuan Lu, *Complex graphs and networks*, CBMS Regional Conference Series in Mathematics; number 107, (2006), 264+vii pages. ISBN-10: 0-8218-3657-9, ISBN-13: 978-0-8218-3657-6.

(b) Book Chapters

2. Linyuan Lu, Austin Mohr, and László Székely, Quest for Negative Dependency Graphs, in *Recent Advances in Harmonic Analysis and Applications: In Honor of Konstantin Oskolkov* (Eds. D. Bilyk, L. DeCarli, A. Petukhov, A. M. Stokolos, B. D. Wick), Springer Proceedings in Mathematics & Statistics, (2012) 243-258.

3. William Aiello, Fan Chung, and Linyuan Lu. Random evolution in massive graphs, in *Handbook on Massive Data Sets*, (Eds. James Abello et al.), (2002) 97–122.

(c) Referred Journal Papers

4. Shuliang Bai and Linyuan Lu, Spectral radius of $\{0,1\}$-tensor with prescribed number of ones, *Linear Algebra Appl.* **558** (2018), 205-235.

5. Linyuan Lu and Zhiyu Wang, On the size-Ramsey number of tight paths. *SIAM J. Discrete Math.* **32** (2018), no. 3, 2172-2179.

6. Shuliang Bai and Linyuan Lu, A Bound on the Spectral Radius of Hypergraphs with e Edges, *Linear Algebra and its Application*, **549**, (2018), 203-218.

7. Linyuan Lu and Shoudong Man, Connected Hypergraphs with Small Spectral Radius, *Linear Algebra and its Application*, **509**, (2016), 206-227.

8. Shoudong Man, Linyuan Lu, and Shuhua Zhang, Hypergraphs with spectral radius between two limit points, *J. Math. Res. Appl.* **38** (2018), no. 1, 1-22.

9. Linyuan Lu, Kevin G. Milans, Set families with forbidden subposets, *J. Combin. Theory Ser. A.*, **136**, (2015) 126142.

10. Travis Johnston, Linyuan Lu, and Kevin Milans, Boolean algebras and Lubell functions, *J. Combin. Theory Ser. A.*, **136**, (2015) 174183.

11. Linyuan Lu and Laszlo Szekely, A new asymptotic enumeration technique: the Lovasz Local Lemma, *J. Combin. Theory Ser. B*, to appear.

12. Travis Johnston and Linyuan Lu, Turan Problems on Non-uniform Hypergraphs, *Electronic Journal of Combinatorics*, **21** (4), (2014), P22.

13. Linyuan Lu, On crown-free families of subsets, *Journal of Combinatorial Theory Ser. A*, **126** (2014) 216-231.

14. Yong Lin, Linyuan Lu, S.-T. Yau, Ricci-flat graphs with girth at least five, *Communications in Analysis and Geometry*, **22** No. 4, (2014) 671687, 2014.

15. Steve Butler, Ron Graham, and Linyuan Lu, Unrolling residues to avoid progressions, *Mathematics Magazine*, **87** (2014) 83-94.

16. Linyuan Lu, Austin Mohr, and László Székely, Connected Balanced Subgraphs in Random Regular Multigraphs Under the Configuration Model, *Journal of Combinatorial Mathematics and Combinatorial Computing* **86**, (2013), the 25th MCCC Conference, 111-123.

17. Linyuan Lu and Xing Peng, Spectra of edge-independent random graphs, *Electronic Journal of Combinatorics*, **20** (4), (2013) P27.

18. Richard Anstee and Linyuan Lu, Repeated columns and an old chestnut, *Electronic Journal of Combinatorics*, **20** (4), (2013) P2.

19. Linyuan Lu and Jingfen Lan, Diameter of Graphs with Spectral Radius at most $\frac{3}{2}\sqrt{2}$, *Linear Algebra and its Application*, **438**, No. 11, (2013), 4382-4407.

20. Linyuan Lu, Austin Mohr, and Laszlo Szekely, Connected Balanced Subgraphs in Random Regular Multigraphs Under the Configuration Model, *Journal of Combinatorial Mathematics and Combinatorial Computing*, to appear.

21. Linyuan Lu and Xing Peng, High-ordered Random Walks and Generalized Laplacians on Hypergraphs (full version), *Internet Mathematics*, **9**, No. 1, (2013), 3-32.

22. Linyuan Lu and Xing Peng, The Fractional Chromatic Number of Triangle-free Graphs with $\Delta \leq 3$, *Discrete Mathematics* **312**, No. 24, (2012), 3502-3516.

23. Jingfen Lan, Linyuan Lu, and Lingsheng Shi, Graphs with Diameter $n - e$ Minimizing the Spectral Radius, *Linear Algebra and its Application*, **437**, No. 11, (2012), 2823-2850.

24. Linyuan Lu and Xing Peng, Loose Laplacian spectra of random hypergraphs, *Random Structures & Algorithms*, **41** No. 4, (2012), 521-545.

25. Linyuan Lu and Xing Peng, Monochromatic 4-term arithmetic progressions in 2-colorings of $\mathbb{Z}_n$, *J. Combin. Theory Ser. A*, **119** No. 5, (2012), 1048-1065.

26. Andrew D. King, Linyuan Lu, and Xing Peng, A fractional analogue of Brook's theorem, *SIAM J. Discrete Math.*, **26** (2012), 452-471.

27. Jerry Griggs, Wei-Tian Li, Linyuan Lu, Diamond-free Families, *Journal of Combinatorial Theory Ser. A*, **119** (2012) 310-322.

28. Linyuan Lu and Xing Peng, On Meyniel's conjecture of the cop number, *Journal of Graph Theory*, **71**, No. 2, (2012),192-205.

29. Fan Chung, Paul Horn, and Linyuan Lu, Diameter of random spanning trees in a given graph, *Journal of Graph Theory*, **69** No. 3 (2012), (223-240).

30. Yong Lin, Linyuan Lu, and S.T. Yau, Ricci Curvature of graphs, *Tohoku mathematics journal*, **63** No. 4, (2011), 605-627.

31. Linyuan Lu and Yiting Yang, The Randic index and the diameter of graphs, *Discrete Mathematics*, **311**, Issue 14, (2011) 1333-1343.

32. Joshua Cooper and Linyuan Lu, Graphs with Asymptotically Invariant Degree Sequences under Restriction, *Internet Mathematics*, **7** 1, (2011), 67-80.

33. Wei-Tian Li, Linyuan Lu, and Yiting Yang, Routing numbers of Cycles, Complete Bipartite Graphs, and Hypercubes, *SIAM J. Discrete Math.* **24**, (2010), 1482-1494.

34. Jerrold R. Griggs and Linyuan Lu, On families of subsets with a forbidden subposet, *Combinatorics, Probability and Computing*, **18**, Special Issue 05, (2009), 731-748.

35. Linyuan Lu and Yi Zhao, An exact result and its application on hypergraph Turán numbers, *SIAM J. Discrete Math.* **23** (2009) 1324-1334.

36. Fan Chung, Paul Horn, and Linyuan Lu, Percolation in General Graphs, *Internet Mathematics*, **6** 3, (2009), 331-347.

37. Linyuan Lu, Explicit construction of small Folkman graphs, *SIAM J. Discrete Math.*, **21** (2008), No. 4, 1053-1060.

38. Linyuan Lu and László Székely, Using Lovasz Local Lemma in the space of random injections, *Electronic Journal of Combinatorics*, **14**(1) #63, (2007).

39. Reid Andersen, Fan Chung, Linyuan Lu, Drawing power law graphs using a local/global decomposition, *Algorithmica* **47** (2007), no. 4, 379–397.

40. Fan Chung and Linyuan Lu, Concentration inequalities and martingale inequalities — a survey, *Internet Mathematics*, **3** (2006), No. 1, 79–127.

41. Fan Chung and Linyuan Lu, The volume of the giant component for a random graph with given expected degrees, *SIAM J. Discrete Math.*, **20** (2006), No. 2, 395–411.

42. Reid Andersen, Fan Chung, and Linyuan Lu, Modeling the small-world phenomenon with local network flow, *Internet Mathematics*, **2** No. 3, (2005), 359–385.

43. Fan Chung and Linyuan Lu, Coupling on-line and off-line analyses for random power law graphs, *Internet Mathematics*, **1** No. 4, (2004), 409–461.

44. Fan Chung, Linyuan Lu, and Van Vu, Eigenvalues of random power law graphs, *Internet Mathematics*, **1** No. 3, (2004), 257–275.

45. Fan Chung and Linyuan Lu, The small world phenomenon in hybrid power law graphs, *Lect. Notes Phys.* **650** (2004), 89-104.

46. Fan Chung, Ronald Graham, and Linyuan Lu. Guessing secrets with inner product questions, *Internet Mathematics*,**1**, no. 2, (2004), 193-217.

47. Fan Chung and Linyuan Lu. The average distances in random graphs with given expected degrees, *Internet Mathematics* **1**, No. 1, (2003), 91–114.

48. Fan Chung, Linyuan Lu and Van Vu, The spectra of random graphs with given expected degrees, *Proceedings of National Academy of Sciences*, **100**, No. 11, (2003), 6313-6318.

49. Fan Chung and Linyuan Lu, T. Gregory Dewey, and David J. Galas. Duplication models for biological networks, *Journal of Computational Biology*, **10**, No. 5, (2003), 677-688.

50. Fan Chung, Linyuan Lu, and Van Vu, Eigenvalues of random power law graphs, *Annals of Combinatorics*, **7** (2003), 21–33.

51. Fan Chung and Linyuan Lu. Connected components in a random graph with given degree sequences, *Annals of Combinatorics*, **6** (2002), 125–145.

52. Fan Chung and Linyuan Lu. The average distances in random graphs with given expected degrees, *Proc. Natl. Acad. Sci.* **99** (2002), 15879–15882.

53. Ke Liang, Zixin Hou, and Linyuan Lu. On sheets of orbit covers for classical semisimple Lie groups, *Sci. China Ser. A*, **45(2)**, (2002), 155–164.

54. Fan Chung and Linyuan Lu. The diameter of random sparse graphs, *Adv. in Appl. Math.* **26** (2001), 257–279.

55. William Aiello, Fan Chung, and Linyuan Lu. A random graph model for power law graphs, *Experiment. Math.* **10(1)**, (2000), 53–66.

56. Fan Chung and Linyuan Lu, An upper bound for the Turán number $t_3(n, 4)$, *J. Combin. Th. Ser. A* **87** (1999), 381–389.

57. Linyuan Lu and Liang Ke. Sheets and rigid orbit covers of exceptional Lie groups, *Chinese Sci. Bull.* **43(16)**, (1998), 1702–1706.

58. Zixin Hou and Linyuan Lu. A class of homogeneous semisimple spaces, *Chinese Ann. Math. Ser. B* **19(3)**, (1998), 321–330.

(d) Papers In Peer-Reviewed Conference Proceedings

59. Linyuan Lu, Arthur L.B. Yang, and James J.Y. Zhao, Graphon-Inspired Analysis on the Fluctuation of the Chinese Stock Market, in *Algorithms and Models for the Web Graph*, Lecture Notes in Computer Science 10088, A. Bonato, F. Graham, P. Prałat, (2016) 74-87.

60. Max Land and Linyuan Lu, An upper bound on the burning number of graphs, in *Algorithms and Models for the Web Graph*, Lecture Notes in Computer Science 10088, A. Bonato, F. Graham, P. Prałat, (2016) 1-8.

61. Edward Boehnlein, Peter Chin, Amit Sinha, Linyuan Lu, Computing Diffusion State Distance using Green's Function and Heat Kernel on Graphs, in *Algorithms and Models for the Web Graph*, Lecture Notes in Computer Science 8882, A. Bonato, F. Graham, P. Prałat, (2014) 79-95.

62. Sang P. Chin, Elizabeth Reilly, and Linyuan Lu, Finding structures in large-scale graphs. In *Proceedings of SPIE*, **vol. 8408**, (2012) p. 840805.

63. Linyuan Lu and Xing Peng, High-ordered Random Walks and Generalized Laplacians on Hypergraphs, Alan M. Frieze, Paul Horn, Pawel Pralat (Eds.): *Algorithms and Models for the Web Graph - 8th International Workshop WAW 2011, Atlanta, GA, USA, May 27-29, 2011. Proceedings.* Lecture Notes in Computer Science **6732**, 14-25.

64. Fan Chung, Paul Horn and Linyuan Lu. The Giant Component in a Random Subgraph of a Given Graph, Konstantin Avrachenkov, Debora Donato, Nelly Litvak (Eds.): *Algorithms and Models for the Web-Graph, 6th International Workshop, WAW 2009, Barcelona, Spain, February 12-13, 2009. Proceedings.* Lecture Notes in Computer Science **5427** 38-49.

65. Reid Anderson, Fan Chung, and Linyuan Lu, Drawing power law graph, in *Graph Drawing, Lecture Notes in Computer Science* **3383**, (2005), 12-17.

66. Reid Anderson, Fan Chung, and Lincoln Lu. Analyzing the small world phenomenon using a hybrid model with local network flow, in *Algorithms and Models for the Web-Graph: Third International Workshop, WAW 2004, Rome, Italy, October 16, 2004, Proceeedings. Lecture Notes in Computer Science*, **3243**, (2004), 19-30.

67. Ju Wang, Linyuan Lu and Andrew. A. Chien. Tolerating denial-of-service attacks using overlay networks - Impact of overlay network topology, *Proceedings of the 2003 ACM workshop on Survivable and self-regenerative systems: in association with 10th ACM Conference on Computer and Communications Security*, (2003), 43–52.

68. Fan Chung, Ronald Graham, and Linyuan Lu. Guessing secrets with inner product questions (extended abstract), *Proceedings of the Thirteenth ACM-SIAM Symposium on Discrete Algorithms*, (2002), 247–253.

69. William Aiello, Fan Chung, and Linyuan Lu. Random evolution in massive graphs (extended abstract), *Proceedings of the Forty-Second Annual Symposium on Foundations of Computer Science*, (2001), 510–519.

70. Linyuan Lu. The diameter of random massive graphs, *Proceedings of the Twelfth ACM-SIAM Symposium on Discrete Algorithms*, (2001), 912–921.

71. William Aiello, Fan Chung, and Linyuan Lu. A random graph model for massive graphs, *Proceedings of the Thirty-Second Annual ACM Symposium on Theory of Computing*, (2000), 171–180.

(e) Preprints

72. Linyuan Lu and Zhiyu Wang, On the cover Turán number of Berge hypergraphs, arXiv:1903.12082 [math.CO]

73. Linyuan Lu and Zhiyu Wang, On the cover Ramsey number of Berge hypergraphs, arXiv:1901.09058 [math.CO]

74. Linyuan Lu and Zhiyu Wang, Minimum co-degree threshold for Berge Hamiltonian cycles in hypergraphs, arXiv:1901.06042 [math.CO].

75. Liying Kang, Lele Liu, Linyuan Lu, Zhiyu Wang, The extremal p-spectral radius of Berge-hypergraphs, arXiv:1812.06032 [math.CO].

76. Mohammad Ali Javidian, Linyuan Lu, Marco Valtorta, Zhiyu Wang, On a hypergraph probabilistic graphical model, arXiv:1811.08372 [cs.DS]

77. Hui Lei and Linyuan Lu, On Hypergraph Lagrangians and Frankl-Fredi's Conjecture, arXiv:1806.11259 [math.CO]

78. Hui Lei, Linyuan Lu, Yuejian Peng, On Lagrangians of 3-uniform hypergraphs, arXiv:1806.10846 [math.CO]

79. Alice L. L. Gao, Linyuan Lu, Matthew H. Y. Xie, Arthur L. B. Yang, Philip B. Zhang, The Kazhdan-Lusztig polynomials of uniform matroids, arXiv:1806.10852 [math.CO]

80. Linyuan Lu, The maximum p-Spectral Radius of Hypergraphs with m Edges, arXiv:1803.08653 [math.CO]

81. Lele Liu and Linyuan Lu, The α-normal labeling method for computing the p-spectral radii of uniform hypergraphs, arXiv:1803.06385 [math.CO]

82. Linyuan Lu and Zhiyu Wang, Color-disjoint rainbow spanning trees of edge-colored graphs, arXiv:1802.08918 [math.CO]

83. Linyuan Lu and Zhiyu Wang, A note on 1-guardable graphs in the cops and robber game, arXiv:1804.02802 [math.CO]

84. Linyuan Lu, Matthew H. Y. Xie, Arthur L. B. Yang, Kazhdan-Lusztig polynomials of fan matroids, wheel matroids and whirl matroids, arXiv:1802.03711, [math.CO]

85. Richard Anstee, Jeffrey Dawson, Linyuan Lu, Attila Sali, Multivalued matrices and forbidden configurations, arXiv:1705.01593 [math.CO]

86. Richard Anstee and Linyuan Lu, Unavoidable Multicoloured Families of Configurations, arXiv:1409.4123 [math.CO]

87. Linyuan Lu and Xing Peng, High-order Phase Transition in Random Hypergrpahs, arXiv:1409.1174 [math.CO]

CONFERENCES and PRESENTATIONS

(a) Lecture Series

- Six 60-minute talks on "Random Graph Theory", Nankai University, Tianjin, China, July 7-30, 2015.

- Five 90-minute talks on "Selected topics on spectral graph theory", Nankai University, Tianjin, China, May 16-June 12, 2014.

- Fourteen 90-minute talks on "Probablistic methods in Combinatorics", Mathematical Sciences Center, Tsinghua University, Beijing, China, November 16 – December 30, 2011.

- Six 90-minute talks on "Complex graphs and networks", *BASICS'08 Summer School on Graphs and Algorithms*, Guiyang, China, July 27 – August 3, 2008.

(b) Invited 50-minute Conference talks

1. Color-disjoint rainbow spanning trees of edge-colored graphs, *International Conference on Graph Theory and Combinatorics*, Fuzhou University, China, April 19-20, 2018.

2. Extremal poset problems, *2017 XiAn International Workshop on Graph Theory and Combinatorics* Northwestern Polytechnical University, XiAn, China June 16-17, 2017. (40 minutes).

3. A Bound on the Spectral Radius of Hypergraphs with e Edges, *Recent Advances in Extremal Combinatorics Workshop*, Tsinghua Sanya International Mathematics Forum, Sanya, China, May 22-26, 2017. (45 minutes)

4. Ricci-flat Graphs with Girth at least Five, *Curvaures of Graphs, Simplicial Complexes and Metric Spaces Workshop*, Tsinghua Sanya International Mathematics Forum, Sanya, China, March 13-17, 2017.

5. Normalized Laplacian Tensor and Isoperimetric Inequalities for Uniform Hypergraphs, *International Workshop on Spectral Hypergraph Theory*, Harbin Engineering University, May 26-29, 2016.

6. Laplacian Spectra for Random Graphs and Hypergraphs, *Workshop on Tensor, Matrix, and Their Applications*, Nankai University, Tianjin, May 2124, 2016.

7. Connected Hypergraphs with Small Spectral Radius, *International Symposium on Hypergraphs and Hypernetworks*, XiNing, China, July 24-26, 2015.

8. Laplacian Spectra for Random Graphs and Hypergraphs, *Geometry and Analysis on Graphs*, Fudan University, Shanghai, China, July 22-23, 2015.

9. Graphs with small spectral radius, *Workshop on Spectral Graph Theory and Related Topics*, Taipei, Taiwan, November 28, 2013.

10. The giant component in a random subgraph of a given graph, *Atlanta Lecture Series in Combinatorics and Graph Theory* **IV**, Atlanta, November 5-6, 2011.

11. Extremal Problems on Subsets and Hypergraphs, *The Sixth International Congress of Chinese Mathematicians*, Taipei, July 14-19, 2013. (45 minutes)

12. Explicit Construction of Small Folkman Graphs, *The 22nd Clemson mini-conference*, Clemson University, Clemson, SC, October 11-12, 2007.

(c) Invited 50-minute Colloquium/Seminar talks

1. The maximum p-Spectral Radius of Hypergraphs with m Edges, Georgia State University, Nov 2, 2018.

2. Extremal Problems on Posets and Hypergraphs, Nankai University, June 21, 2018.

3. The maximum p-Spectral Radius of Hypergraphs with m Edges, Nankai University June 7, 2018.

4. The maximum p-Spectral Radius of Hypergraphs with m Edges, Hunan University, May 16, 2018.

5. Ricci-flat Graphs with Girth at least Five, Differential Geometry Seminar, Harvard University, Feburary 6, 2018.

6. Unrolling residues to avoid progressions, Zhejiang University, Hangzhou China, June 22, 2017.

7. Some Extremal Problems on the Spectral Radius of Graphs and Hypergraphs, Shanghai University, March 7 2017.

8. Connected Hypergraphs with Small Spectral Radius, Shanghai Jiao Tong University, August 5, 2015.

9. Unrolling residues to avoid progressions, *Tianjin University*, Tianjin, China, June 6, 2014.

10. Probabilistic Methods for Complex Graphs, *Zhejiang Wanli University*, Ningbo, China, May 27, 2014.

11. Probabilistic Methods for Complex Graphs, *Middle Tennessee State University*, Murfreesboro, TN, March 24, 2014.

12. Forbidden configurations and repeated columns, *Institute of Mathematics, Academia Sinica*, Taipei, Taiwan, November 29, 2013.

13. Unrolling residues to avoid progressions, *Nankai University*, Tianjin, China, August 2, 2013.

14. Probabilistic Methods for Complex Graphs, *Tongji University*, Shanghai, China, July 22, 2013.

15. Unrolling residues to avoid progressions, *Georgia State University*, Atlanta, GA, May 1, 2013.

16. Probabilistic Methods for Complex Graphs, *William & Mary*, Williamsburg, VA, April 19, 2013.

17. Extremal families of subsets and the Lubell function, *University of Delaware*, Newark, DE, April 19, 2012.

18. Probabilistic methods for complex graphs, *Institute of Computing Technology, Chinese Academy of Sciences*, December 26, 2011.

19. Graph percolation and Laplacian on hypergraphs, Renmin University, Beijing, China, December 2, 2011.

20. Explicit Construction of Small Folkman Graphs, *Tsinghua University*, Beijing, China, June 10, 2010.

21. A random graph model for massive graphs, *Differential Geometry Seminar at the Harvard University*, Oct. 11, 2009.

22. The giant component in a random subgraph of a given graph, *Combinatorics Seminar at Georgia Institute of Technology*, Atlanta, GA, October 9, 2008.

23. Probabilistic Methods for Complex Graphs, Combinatorics Center at Nankai University, Tianjin, China, June 2-5, 2008.

24. Coloring Non-Uniform Hypergraphs Red and Blue, *Combinatorics Seminar at Georgia Institute of Technology*, Atlanta, GA, May. 25, 2006.

25. Spectra of Random Power Law Graphs, *Combinatorics Seminar at Georgia Institute of Technology*, Atlanta, GA, Nov. 19, 2004.

26. Guessing Secrets, *Colloquium at Georgia State University*, Atlanta, GA, Nov. 19, 2004.

27. Random Graphs with Given Expected Degree Sequence, *Colloquium at NIU Mathematics Department*, Northern Illinois University, February 25, 2002.

(c) Invited 25-30 minute talks

1. Minimum co-degree theshold for Berge Hamiltonian cycles, *AMS Spring Southeastern Sectional Meeting*, Auburn University, March 15-17, 2019.

2. The maximum p-Spectral Radius of Hypergraphs with m Edges, *The 50th Southeastern International Conference on Combinatorics, Graph theory, & Computing* Florida Atlantic University, March 4-8, 2019.

3. The maximum p-Spectral Radius of Hypergraphs with m Edges, *The 8th Xian Workshop on Graph theory and Combiantorics*, Northwestern Polytechnical University, May 11-13, 2018.

4. Spectral Radius of $\{0, 1\}$-Tensor with Prescribed Number of Ones, *SIAM Conference on Applied Linear Algebra*, Hongkong, May 4-8, 2018.

5. Color-disjoint rainbow spanning trees of edge-colored graphs, *AMS Spring Southeastern Sectional Meeting*, Nashville, TN, April 14-15, 2018.

6. A note on 1-guardable graphs in the cops and robber game, *AMS Fall Southeastern Sectional Meeting*, Orlando, FL, September 23-24, 2017.

7. A note on 1-guardable graphs in the cops and robber game, *AMS Fall Eastern Sectional Meeting*, Buffalo, NY, September 16-17, 2017.

8. Unrolling residues to avoid progressions, *2017 Workshop on Colored Notations of Connectivity in Graphs*, Nankai University, Tianjin, China, May 29-31, 2017.

9. Degenerate Hypergraphs, *SIAM Conference on Discrete Mathematics*, Georgia State University, Atlanta, June 6-10, 2016.

10. Turán Problems and Degenerate Hypergraphs, *Workshop on Extremal and Random Phenomenon in Discrete Mathematics*, Nankai University, Tianjin, China, May 14-15, 2016.

11. Connected Hypergraphs with Small Spectral Radius, *AMS Fall Southeastern Sectional Meeting*, Memphis, TN October 17-18, 2015.

12. Laplacian Spectra for Random Graphs and Hypergraphs, *8th International Congress on Industrial and Applied Mathematics*, Beijing, China, August 10-14, 2015.

13. Unavoidable Multicoloured Families of Configurations, *Connections in Discrete Mathematics*, Vancouver, BC, Canada, June 15-19, 2015.

14. Subgraphs in Random Non-uniform Hypergraphs, *The Canadian Discrete and Algorithmic Mathematics Conference*, Saskatoon, Canada, June 1-4, 2015.

15. A Combinatorial Identity on Galton-Watson Process, *28th Cumberland Conference on Combinatorics, Graph Theory & Computing*, Columbia, SC, May 15-17, 2015.

16. Unavoidable Multicoloured Families of Configurations, *AMS Spring Southeastern Sectional Meeting*, Huntsville, AL, March 27-29, 2015.

17. Computing Diffusion State Distance using Green's Function and Heat Kernel on Graphs, *11th International Workshop on Algorithms and Models for the Web Graph*, Beijing, China, December 17-18, 2014.

18. Connected Hypergraphs with Small Spectral Radius, *AMS Southeastern Sectional Meeting*, Knoxville, TN, March 21-23, 2014.

19. High Order Phase Transition in Random Hypergraphs, *Workshop on Probability and Graphs*, EURANDOM, Eindhoven, Netherlands, January 6-10, 2014.

20. Extremal problems on subsets and non-uniform hypergraphs, *Workshop in Combinatorics and Graph Theory*, Hunan University, Changsa, China, May 31-June 5 2014. (20 minutes)

21. Repeated columns and an old chestnut, *AMS Fall Southeastern Sectional Meeting*, Louisville, KY, October 5-6, 2013.

22. Turán Problems on Non-uniform Hypergraphs, *AMS Spring Central Sectional Meeting*, Iowa State University, Ames, IA, April 26-28, 2013.

23. Unrolling residues to avoid progressions, *37th annual meeting of the SIAM Southeastern Atlantic Section*, Knoxville, TN, March 22-24, 2013.

24. On crown-free families of subsets, *International Conference on Advances in Interdisciplinary Statistics and Combinatorics*, Greensboro, NC, October 5-7, 2012.

25. Turán Problems on Non-uniform Hypergraphs, *MIGHTY LIII conference*, Iowa State University, Ames, IA, Sept. 21-22, 2012.

26. Ricci-flat graphs with girth at least five, *25th Cumberland Conference on Combinatorics, Graph Theory, & Computing*, Johnson City, TN, May 10-12, 2012.

27. Diameters of Graphs with Spectral Radius at most $\frac{3}{2}\sqrt{2}$, *AMS Spring Southeastern Section Meeting*, Tampa, FL, March 10-11, 2012.

28. Monochromatic 4-term arithmetic progressions in 2-colorings of $\mathbb{Z}_n$, *Integers Conference*, University of West Georgia, Carrollton, GA, October 26-29, 2011.

29. High-ordered Random Walks and Generalized Laplacians on Hypergraphs, *AMS Fall Southeastern Section Meeting*, Wake Forest University, Winston-Salem, NC September 24-25, 2011.

30. Generalized Laplacian Eigenvalues of Random Hypergraphs, *The 15th International Conference on Random Structures and Algorithms*, Altanta, May 24-28, 2011.

31. Minimum spectral radius of graphs with diameter $n - e$, *The 25th Cumberland Conference on Combinatorics, Graph Theory, and Computing*, Louisville, KY, May 12-14, 2011.

32. An fractional analogue of Brooks' theorem, *The 8-th meeting of the Carolina Mathematics Seminar*, University of South Carolina Lancaster, Lancaster, SC, April 15, 2011.

33. Monochromatic short-term arithmetic progressions in $\mathbb{Z}_n$, *SIAM Southeastern Atlantic Section Conference*, Charlotte, NC, March 26-27, 2011.

34. An fractional analogue of Brooks' theorem, *AMS Spring Southeastern Section Meeting*, Statesboro, GA, March 12-13, 2011.

35. Ricci curvature of graphs, *AMS Fall Southeastern Section Meeting*, Richmond, VA, November 6-7, 2010.

36. The Fractional Chromatic Number of Triangle-free Graphs with $\Delta \leq 3$, *AMS Spring Central Sectional Meeting*, St. Paul, MN, April 10-11, 2010.

37. The giant component in a random subgraph of a given graph, *The 33rd SIAM Southeastern-Atlantic Section Conference*, University of South Carolina, April 4-5, 2009.

38. Diameter of Random Spanning Trees in a Given Graph, *AMS Spring Central Sectional Meeting*, University of Illinois at Urbana-Champaign, March 27-29, 2009.

39. Diameter of Random Spanning Trees in a Given Graph, *SIAM Annual Meeting*, San Diego, CA, July 7-11, 2008.

40. Explicit Construction of Small Folkman Graphs, *AMS Spring Central Section Meeting*, University of Indiana, Bloomington, IN, April 4-6, 2008.

41. On Families of Subsets with a Forbidden Subposet, *Mini-Conference on Applied Combinatorics*, University of South Carolina, Columbia, SC October 15-16, 2007.

42. On Families of Subsets with a Forbidden Subposet, *AMS 2007 Central Section Meeting*, Chicago, IL, October 5-6, 2007.

43. Using Lovász Local Lemma in the Space of Random Matchings, *Workshop on Complex Networks and their Application*, Georgia Institute of Technology, Atlanta, GA, January 22-24, 2007.

44. On a Problem of Erdős and Lovász on Coloring Non-Uniform Hypergraphs, *AMS Southeastern Section Meeting*, Fayetteville, AR, November 3–4, 2006.

45. Hexagon-free Subgraphs in the Hypercube, *Integers Conference 2005*, Carollton, GA, Oct. 27–30, 2005.

46. Duplication Models for Biological Networks, *Bioinformatics mini-symposium at University of South Carolina*, Columbia, SC, March 19, 2005.

47. Duplication Models for Biological Networks, *SIAM Southeast Atlantic Section Meeting*, Charleston, SC, Mar. 25–26, 2005.

48. Power Law versus Semicircle Law — Spectra of Random Power Law Graphs, *SIAM Conference on Discrete Mathematics*, Nashville, TN, USA, June 13-16, 2004.

49. Several Concentration Inequalities of Power Law Graphs, *Combinatorics of Large Sparse Graphs*, San Marcos, California USA, June 7-11, 2004.

50. Spectra of Random Power Law Graphs, *Workshop on Web Structure and Algorithms*, Carnegie Mellon University, Pittsburgh, PA, April 9-10, 2004.

(d) other 25-minutes talks at Conferences

1. Guessing secrets with inner product questions, *Symposium on Foundations of Computer Science*, San Francisco, California, January 6-8, 2002.

2. Guessing secrets with inner product questions, *AMS joint mathematics Meetings*, San Diego, California, January 7-9, 2002.

3. A random graph model for massive graphs, *Symposium on Theory of Computing*, Portland, Oregon, May 21-23, 2000.

4. Random evolution in massive graphs, *Symposium on Foundations of Computer Science*, Las Vegas, Nevada, October 14-17, 2001.

5. The diameter of random massive graphs, *Symposium on Discrete Algorithms*, Washington D.C. January 7-9, 2001.

(e) other 37 talks at local seminars; about 2 talks/per year.

GRANT

1. ONR N00014-17-1-2842, Hypergraph-based Causal Modeling, Linyuan Lu (PI) and Marco Valtorta, 9/1/2017-8/31/2018, $100,000.

2. NSF DMS-1600811, Extremal and Probabilistic Combinatorics with Applications II, László A. Székely and Linyuan Lu (Co-PI), 7/1/2016–6/30/2019, $180,000.

3. NSF DMS-1500991 Twenty-Eighth Cumberland Conference on Combinatorics, Graph Theory, and Computing, Linyuan Lu (PI) and Eva Czabarka, 03/01/2015-02/19/2016, $15,000.

4. NSF DMS-1300547 Extremal and Probabilistic Combinatorics with Applications, László A. Székely and Linyuan Lu (Co-PI), 7/1/2013–6/30/2016, $184,111.

5. ONR N00014-13-1-0717 Spectral, Probabilistic, and Information-theoretic Analysis for Graphs and Hypergraphs, Linyuan Lu (PI), 7/31/2013–11/29/2015, $196,226.

6. USC Office of the Provost, Summer School on Network Science at USC, László A. Székely, Linyuan Lu (Co-PI), and Qi Wang, 9/1/2012–6/30/2013, $21,949.

7. NSF DUE-CCLI-1020692 Collaborative Research: STEM Real World Applications of Mathematics, Linyuan Lu (PI) and Joshua Cooper, 10/1/2010-9/30/2013, $79,999.

8. NSF DMS-1000475 Extremal and probabilistic combinatorics, László A. Székely and Linyuan Lu (Co-PI), 7/1/2010–6/31/2013, $175,930.

9. NSF DMS-0701111: Extremal and probabilistic combinatorics, László A. Székely and Linyuan Lu (Co-PI), 8/1/2007–7/31/2010, $104,118.

SERVICES TO PROFESSION

(a) **EDITORIAL BOARD:** *Managing editor* for the Journal of Combinatorics (07/09 – 01/13). *Editor* for the Journal of Combinatorics (01/13 – present). *Editor* for Order (01/16 – present).

(b) Participated in 1 NSF Panel, National Science Foundation, 4201 Wilson Boulevard, Arlington, VA 22230. Get invitation to another NSF Panel but decline due to time confliction.

(c) External Services on organizing Workshop/Symposium

1. Orginaning the Workshop on Extremal and Random Phenomenon in Discrete Mathematics, Tianjin, China, May 14-16, 2016.

2. Organizing the 28-th Cumberland Conference on Combinatorics, Graph Theory, and Computing, Columbia, SC, May 15-17, 2015.

3. Co-organizing the Summer School on Network Science at USC, May 20-24, 27-31, 2013.

4. Co-organizing a section "Extremal Combinatorics", *AMS Spring Southeastern Section Meeting*, Tampa, FL, March 10-11, 2012.

5. Co-organizing a section "Extremal combinatorics" at *AMS Fall Southeastern Section Meeting*, Wake Forest University, Winston-Salem, NC September 24-25, 2011.

6. Program Committee member for "The 8th Workshop on Algorithms and Models for the Web-Graph" (WAW 2011), Emory University, May 28-29, 2011.

7. Co-organizing a mini-symposium "Extremal Problems in Discrete Math" at the 35th SIAM Southeastern Atlantic Section Conference, Charlotte, NC, March 26-27, 2011.

8. Program Committee member for "The 7th Workshop on Algorithms and Models for the Web-Graph" (WAW 2010), Stanford University, December 13-16, 2010.

9. Co-organizing a mini-symposium "Extremal and Probabilistic Combinatorics" (3 sessions) at the 33rd SIAM Southeastern-Atlantic Section Conference, Columbia, SC, April 4-5, 2009.

10. Organizing Committee member for "The 5th Workshop on Algorithms and Models for the Web-Graph" (WAW2007), La Jolla, December 11-12, 2007.

11. Organizing minisymposium "Probabilistic Methods for Complex Graphs" at 2008 SIAM Annual Meeting, San Diego, CA, July 7-9, 2008.

(d) Refereed 8 NSF proposals and 4 NSA proposals.

RESEARCH SUPERVISION

- Working with Postdocs: Csaba Biro (2008-2010); Kevin Milans (2010-2012).

- Supervising Ph. D students:

  1. Zhiyu Wang(current, 4th year), winner of 2018-2019 Breakthrough Graduate Scholar.
  2. Joshua Thompson (current 3rd year).
  3. Andrew Meier (current 2nd year).
  4. Shuliang Bai, Ph. D in 2018, thesis "Turán Problems and Spectral Theory on Hyper-graphs and Tensors", winner of Outstanding Graduate Student. Now Postdoc at Harvard University.
  5. Edward Boehnlein, Ph. D in 2016, thesis "On Crown-free Set Families, Diffusion State Difference, and Non-uniform Hypergraphs".
  6. Travis Johnston, Ph. D in 2014, thesis "Turán Problems on Non-uniform Hypergraphs", won Dean's Dissertation Fellowship (a $25,000-dollars scholarship) at USC. After two-year Postdocs at Delaware, now working as a Postdoctoral Researcher at Oak Ridge National Laboratory.
  7. Xing Peng, Ph. D in 2012, thesis "Fractional chromatic numbers and spectra of graphs", won Dean's Dissertation Fellowship (a $25,000-dollars scholarship) at USC. After 3-year postdoc at UCSD, now he is an Associate Professor at Tianjin University China.

- Supervising Master Students

  1. Ann Cliften, M.S. in 2015, thesis "The Packing Chromatic Number of Random d-Regular Graphs".
  2. Michael Levet, M.S. in 2018, thesis "Graph Homomorphisms and Vector Colorings".

- Supervising visiting Ph. D. students for at least one year long.

  1. Mingrui Liu (8/2018 – present), Ph. D candidate from Tsinghua University.
  2. Lele Liu (9/2017 – present), Ph. D candidate from Shanghai University.
  3. Shoudong Man (10/2013 – 9/2014), Ph.D in 2015 from Renmin University. Now assistant Professor at Tianjin University of Finance and Economics.
  4. Jingfen Lan (10/2010 – 9/2011), Ph.D in 2012 from Tsinghua University. Now assistant Professor at Xidian University, China.

- Substantial joint research, resulting in papers, with Ph. D. students whom I did not supervise:

  1. Austin Mohr (Ph. D in 2013, now tenure-track assistant professor at Nebraska Wesleyan University), joint work at USC: one book chapter and one paper.
  2. Wei-Tian Li(Ph. D in 2011, now associate professor at National Chung Hsing University), joint work at USC: two papers.
  3. Yiting Yang (Ph. D in 2010, now associate professor at Tongji University), joint work at USC: three papers.

- Supervising Undergraduate students:

  1. Jeff Arredondo (awarded Victor W. Laurie Undergraduate Research Scholarship, and working on nerve networks under Dr. Lu's supervision in 2008.)
  2. Caelan Reed Burris (supported by NSF grant DUE-CCLI-1020692 in the summer of 2011, working on the modules "Routing Number of Graphs" and "Graph Theory Networks, Degree Sequences and the Power Law".)

- Supervising SIAM Student chapter (2008-2011)
  The SIAM Chapter's mission is to promote student interests in applied and computational mathematics and student awareness of career opportunities in industry. Dr. Lu worked with student chapter officers to apply the fund for the SIAM chapter, to organize 5-6 seminar talks per year, to sponsor graduate students attend SIAM meetings.

- Frequent member of comprehensive examination and doctoral defense committees at the Department of Mathematics and Department of Computer Science & Engineering, USC.

- External reviewer of doctoral dissertation

  1. Stephen Young, Ph. D in 2007, College of Computing, Georgia Institue of Technology.