Qidong He — Curriculum Vitae

110 Frelinghuysen Rd – Piscataway, NJ 08854-8019 – USA
qh97@math.rutgers.edu • sites.google.com/view/qidonghe

Education

Rutgers University–New Brunswick **Piscataway, NJ**
Ph.D., Mathematics *2021–Present*
Advisors: Ian Jauslin & Joel Lebowitz

Rutgers University–New Brunswick **Piscataway, NJ**
M.S., Mathematics *2021–2023*

Colby College **Waterville, ME**
B.A., summa cum laude, Mathematics & Physics with a minor in Japanese *2017–2021*
Thesis: Counting conjugacy classes of elements of finite order in compact exceptional groups. Advisor: Tamar Friedmann

Research interests

Probability theory, statistical physics, random packings

Research Papers

Preprints

[8] Qidong He. Unified criteria for crystallization in hard-core lattice systems with applications to polyomino fluids and chiral mixtures. 2026. arXiv: 2602.05294 [math-ph].

[7] Qidong He. Extended regime of nematic order in an interacting monomer-dimer model of Heilmann and Lieb. 2025. arXiv: 2511.23437v2 [math-ph].

[6] Qidong He, Ian Jauslin, Joel Lebowitz, and Ron Peled. Liquid-vapor transition in a model of a continuum particle system with finite-range modified Kac pair potential. 2025. arXiv: 2510.24825 [math-ph].

Publications

[5] Qidong He. Upper bounds for the connective constant of weighted self-avoiding walks. *Journal of Physics A: Mathematical and Theoretical*, 58(50):5003, 2025. DOI: 10.1088/1751-8121/ae280e.

[4] Qidong He. Analyticity for locally stable hard-core gases via recursion. *Journal of Statistical Physics*, 192(4):46, 2025. DOI: 10.1007/s10955-025-03435-8.

[3] Qidong He and Ian Jauslin. High-fugacity expansion and crystallization in non-sliding hard-core lattice particle models without a tiling constraint. *Journal of Statistical Physics*, 191(10):135, 2024. DOI: 10.1007/s10955-024-03349-x.

[2] Tamar Friedmann and Qidong He. Counting conjugacy classes of elements of finite order in exceptional Lie groups. *Combinatorial Theory*, 4(1), 2024. DOI: 10.5070/C64163850. Undergraduate research.

[1] Qidong He and Scott A Taylor. Links, bridge number, and width trees. *Journal of the Mathematical Society of Japan*, 75(1):73–111, 2023. DOI: 10.2969/jmsj/86158615. Undergraduate research.

Talks

129th Statistical Mechanics Conference: Extended regime of nematic order in an interacting monomer-dimer model of Heilmann and Lieb (short talk). Rutgers University, *Dec 2025*

Rutgers Graduate Student Pizza Seminar: Structures of random packings. Rutgers University, *Oct 2025*

Rutgers Graduate Student Combinatorics Seminar: Random packings. Rutgers University, *Apr 2025*

126th Statistical Mechanics Conference: Analyticity for classical hard-core gases via recursion (short talk). Rutgers University, *May 2024*

124th Statistical Mechanics Conference: Crystallization phenomenon in a large class of hard-core lattice particle models (short talk). Rutgers University, *May 2023*

Colby Liberal Arts Symposium (CLAS): Counting conjugacy classes of elements of finite order in G_2. Colby College, *Apr 2021*

North Shore Undergraduate Math Conference: Knot Invariants. Gordon College, *Apr 2019*

Mathematics and Statistics Colloquium: Knot Invariants. Colby College, *Sep 2018*

Teaching Experience

TA, Department of Mathematics, Rutgers University–New Brunswick:
*Recipient of the TA Teaching Excellence Award**
- Recitation instructor: multivariable calculus (F23*, F22)
- TA-at-large: advanced calculus for engineering (F24, Sp24), introductory linear algebra (Sp25, Sp23)
- Grader: advanced calculus for engineering (Sp22), cryptography (Sp22), introduction to applied mathematics (F21), linear algebra (F21)

TA, Department of Mathematics and Statistics, Colby College:
- Grader: abstract algebra (F20), combinatorics (Sp21), honors calculus I (F19), real analysis (Sp20), single-variable calculus (Sp19, F18)

TA, Department of Physics and Astronomy, Colby College:
- Grader: foundations of electromagnetism and optics (Sp20)

Service

Mentoring

Rutgers Directed Reading Program (DRP):

- Aditya Agarwal (F25)
- Keshav Badri, Phase transitions in the Ising model (Su25)
- Derek Chan, Calculating effective volume for a Gaunt–Fisher configuration (Sp25)
- Harry Haedrich, Non-sliding hard-core lattice particle models—proving crystallization (Sp25)

Refereeing

- Combinatorics, Probability and Computing

Honors and Awards

SAS Fellowship: Rutgers University–New Brunswick ($30,833) *Aug 2025*
SGS Research & Conference Travel Award: Rutgers University–N.B. ($1,000) *Mar 2025*
TA Teaching Excellence Award: Rutgers University–New Brunswick *Feb 2024*
Academic Excellence Award: Rutgers University–New Brunswick *Jan 2022*
Marston Morse Prize in Mathematics: Colby College *May 2021*
Julius Seelye Bixler Scholar: Colby College *Sep 2020, Sep 2019*
William A. Rogers Prize in Physics and Astronomy: Colby College *May 2020*
Helen and Robert E. L. Strider Scholar: Colby College *Sep 2018*

Memberships

Sigma Pi Sigma: *May 2021*
Phi Beta Kappa: *Apr 2020*