Xuenan Li

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Columbia University
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Research Interests

Calculus of Variations and Partial Differential Equations
with particular interests in material science

Academic Position

2023- Chu Assistant Professor in Applied Mathematics
COLUMBIA UNIVERSITY

Education

2018- 2023 Ph.D. in Mathematics
COURANT INSTITUTE OF MATHEMATICAL SCIENCES, NEW YORK UNIVERSITY, NY, USA
Advisor: Robert V. Kohn
Thesis: Guest-Hutchinson modes and the macroscopic energy of the Kagome lattice metamaterial and related systems

2015-2018 B.S. in Mathematics and Data Science (double major)
UNIVERSITY OF MICHIGAN, ANN ARBOR, MI, USA

2013-2015 B.S. in Mathematics
SICHUAN UNIVERSITY, CHENGDU, CHINA

Publications & Preprints

Submitted & in preparation:

Li, Xuenan and Kohn, Robert V. , *Some results on the Guest-Hutchinson modes and periodic mechanisms of the Kagome lattice metamaterial,* J Mech Phys Solids 178 (Sept 2023) 105311, published version, arXiv version.

Li, Xuenan and Kohn, Robert V. (2024) *The existence of effective energy of general lattice metamaterials,* in preparation.

Li, Xuenan and Kohn, Robert V. (2024) *The macroscopic behavior of the conformal lattice metamaterial,* in preparation.

Li, Xuenan, Holmes-Cerfon, Miranda and Santangelo, Christian. (2024) *Building rigid frameworks via constrained optimization,* in preparation.

Most Recent Teaching

Fall 2023 — *Instructor*
APAM E4204 Functions of a complex variable
Columbia University

Spring 2024 — *Instructor*
APAM E4101 Dynamical systems
Columbia University

Selected Conferences & Seminar Talks

10/2023 — *The Kagome lattice as a mechanical metamaterial*, 2023 SES Annual Technical Meeting (SES 2023), October 8-11, 2023.

8/2023 — *The macroscopic behavior of the Kagome lattice metamaterial*, 10th International Congress on Industrial and Applied Mathematics (ICIAM 2023), Tokyo, August 20-25, 2023.

10/2022 — *Some results on the Guest-Hutchinson modes and periodic mechanisms of the Kagome lattice metamaterial* (poster), Simons Collaboration on Extreme Wave Phenomena Based on Symmetries Annual Meeting, Flatiron Institute, New York, October 20–21, 2022.

Academic Services

Summer 2024 — I am mentoring one undergraduate student in the Student Research Program at Columbia University; Program title: *Designing singular structures in bar-joint networks.*

Honors & Awards

2023 — SIAM Student Travel Award, 10th International Congress on Industrial and Applied Mathematics (ICIAM 2023)

2022 — Sandra Bleistein Prize, New York University

2022 — SIAM Student Travel Award, SIAM Annual Meeting (AN22)

2018–2023 — New York University MacCracken Graduate Scholarship, New York University

2018 — Wilfred Kaplan Award in Applied Mathematics, University of Michigan

2018 — Outstanding Graduating Senior Award, University of Michigan

2017–2018 — James B. Angell Scholar, University of Michigan

2017 — Sumner B.Myers Award in Analysis, University of Michigan
This is awarded to the undergraduate student who is most excellent in the study of analysis.

2015 — Chinese National Scholarship, Sichuan University
This scholarship is given to the top 3 students to honor their distinguished achievements.