Patrick Lei

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Positions Held

Boston College, Visiting Assistant Professor   Chestnut Hill, MA
July 2025 – present

Education

Ph.D. **Columbia University**, Mathematics   New York, NY
Advisor: Chiu-chu Melissa Liu   Sept 2020 – May 2025

B.S. **University of Massachusetts Amherst**, Mathematics, Computer Science   Amherst, MA
Advisor: Paul Hacking   Sept 2017 – May 2020

Publications and Preprints

Higher genus Gromov-Witten theory of one-parameter Calabi-Yau threefolds II: Feynman rule and anomaly equations   Dec 2024
Patrick Lei
arxiv.org/abs/2412.06527 ⬀ (arXiv preprint)

Higher-genus Gromov-Witten theory of one-parameter Calabi-Yau threefolds I: Polynomiality   Sept 2024
Patrick Lei
arxiv.org/abs/2409.11659 ⬀ (arXiv preprint)

MSP theory for smooth Calabi-Yau threefolds in weighted $\mathbb{P}^4$ Sept 2024
Patrick Lei
arxiv.org/abs/2409.11660 ⬀ (arXiv preprint)

Invited Talks

Algebraic Geometry Seminar   University of Maryland
Sept 2025

Mathematics-String Theory Seminar   Kavli IPMU
June 2025

AMS Central Sectional Meeting   University of Kansas
Special session on enumerative geometry of moduli spaces in algebraic geometry   Mar 2025

Algebraic Geometry Seminar   Columbia University
Jan 2025

Program "Recent developments in higher genus curve counting"   Simons Center for Geometry
Gave two lectures on the Givental formalism and one lecture on Mixed-Spin-P fields   and Physics
Jan 2025 – Jan 2025

Online Geometry and Physics Seminar   IASM, Zhejiang University
Dec 2024

Enumerative Geometry Seminar   Columbia University
Oct 2024

Algebraic Geometry Seminar   University of Illinois Urbana-
Champaign
Sept 2024

Seminars Organized

Learning seminar on computations in enumerative geometry   Columbia University
                                                                         Spring 2025

Learning seminar on enumerative invariants and birational transformations   Columbia University
                                                                         Spring 2024

Learning seminar on geometric representation theory   Columbia University
                                                                         Spring 2022

Learning seminar on category O   Columbia University
                                                                         Fall 2021

Learning seminar on intersection theory   Columbia University
                                                                         Spring 2021

Learning seminar on geometric invariant theory   Columbia University
                                                                         Fall 2020

Teaching

Linear Algebra   Boston College
                              Fall 2025

Linear Algebra   Columbia University
                              Summer 2024

Undergraduate seminar on quantum information theory   Columbia University
                                                                  Spring 2024

Undergraduate seminar on toric varieties   Columbia University
                                                        Fall 2023

Calculus II   Columbia University
                          Spring 2023