

Maria Yampolskaya

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EDUCATION

Ph.D. in Physics (Advisor: Pankaj Mehta) – Boston University September 2019 - Present (Expected May 2025)
Master of Arts in Physics – Boston University May 2021
Bachelor of Arts in Physics and Mathematics – Cornell University May 2019

RESEARCH EXPERIENCE

Graduate Research Fellow, Department of Physics, Boston University Jan 2021 - Present

Advisor: Pankaj Mehta

Formed a model of cell fate specification for identifying signatures of low-dimensional epigenetic landscapes. Collaborated with experimental biologists at the Boston University Center for Regenerative Medicine and the University at Buffalo to validate directed differentiation protocols. Developed the [scTOP](#) Python package. Funded by the Biological Design Center at Boston University.

Graduate Research Fellow, Department of Physics, Boston University Jan 2020 - Jan 2021

Advisor: Ed Kearns

Developed simulation of aerogel ring imaging Cherenkov detector for the EMPHATIC collaboration at the Fermi National Accelerator Laboratory.

PUBLICATIONS

1. C. L. Burgess, ..., **M. Yampolskaya**, ..., D. N. Kotton (2024). Generation of human alveolar epithelial type I cells from pluripotent stem cells. *Cell Stem Cell*. [DOI: 10.1016/j.stem.2024.03.017](https://doi.org/10.1016/j.stem.2024.03.017)
2. L. Ikonomidou, **M. Yampolskaya**, P. Mehta (2023). Multipotent Embryonic Lung Progenitors: Foundational Units of In Vitro and In Vivo Lung Organogenesis. In: Magin, C.M. (eds) *Engineering Translational Models of Lung Homeostasis and Disease*, pages 49-70. Springer, Cham. [DOI: 10.1007/978-3-031-26625-6_4](https://doi.org/10.1007/978-3-031-26625-6_4)
3. **M. Yampolskaya**, M. Herriges, L. Ikonomidou, D. Kotton, and P. Mehta. (2023) scTOP: physics-inspired order parameters for cellular identification and visualization. *Development*. [DOI: 10.1242/dev.201873](https://doi.org/10.1242/dev.201873)
4. M. Herriges, **M. Yampolskaya**, et al. (2023) Durable alveolar engraftment of PSC-derived lung epithelial cells into immunocompetent mice. *Cell Stem Cell*. [DOI: 10.1016/j.stem.2023.07.016](https://doi.org/10.1016/j.stem.2023.07.016)
5. D. Winklehner et al. (2022) Order-of-magnitude beam current improvement in compact cyclotrons. *New Journal of Physics*. [DOI: 10.1088/1367-2630/ac5001](https://doi.org/10.1088/1367-2630/ac5001)
6. R. Connelly, S. Gortler, E. Solomonides, and **M. Yampolskaya**. (2020) The Isostatic Conjecture. *Discrete and Computational Geometry*. [DOI: 10.1007/s00454-018-00051-0](https://doi.org/10.1007/s00454-018-00051-0)

TEACHING & MENTORSHIP EXPERIENCE

Project supervisor to undergraduate research assistant Apr – Dec 2023, Sept 2024 - Present

Graduate Teaching Fellow, Department of Physics, Boston University Spring 2021

Flipped-classroom teaching for PY 106: Introductory Physics for Life Science Majors II

Graduate Teaching Fellow, Department of Physics, Boston University Fall 2019

Flipped-classroom teaching for PY 105: Introductory Physics for Life Science Majors I

AWARDS

DBIO Early Career Prize Session – First Place Graduate Student Award, American Physical Society (2024)

Forum on Outreach & Engaging the Public Scholarship, American Physical Society (2022)

College of Arts and Sciences Summer Experience Grant, Cornell University (2018)
Einhorn Grant, Cornell University (2017)

CONFERENCES & PRESENTATIONS

INVITED

Physics of Life Symposium: Students and Postdocs Edition, Initiative for Theoretical Sciences, CUNY Apr 2023
Physics of Living Systems Short Talks, MIT Apr 2023

ORAL

American Physical Society March Meeting, Minneapolis, MN Mar 2024
American Physical Society DBIO Early Career Prize Session
American Physical Society March Meeting, Las Vegas, NV Mar 2023
American Physical Society March Meeting, Chicago, IL Mar 2022
Greater Boston Area Statistical Mechanics Meeting, Northeastern University Oct 2021
Cornell Conference on Rigidity, Cornell University Jul 2017
Spring Southeastern Sectional Meeting of the American Mathematical Society, Charleston, SC Mar 2017

POSTER

Boulder School in Condensed Matter and Materials Physics: Self-Organizing Matter, Boulder, CO Jul 2024
Physics of Cell Fate Decisions, Institute of Science and Technology Austria
NeurIPS Associative Memory & Hopfield Networks Workshop, New Orleans, LA Dec 2023
Program committee member. Funded by the RPI-IBM AI Research Collaboration.
Biological Design Center Symposium, Boston University Oct 2023
International Physics of Living Systems Network Annual Meeting, Georgia Tech Aug 2023

PARTICIPANT

Advancing Graduate Leadership (AGL) Conference, Washington, DC Aug 2022
Summer School on Soft Solids and Complex Fluids, Amherst, MA Jun 2022
From the Fundamental Lemma to Discrete Geometry, to Formal Verification, University of Pittsburgh Jun 2018

LEADERSHIP & COMMUNITY SERVICE

Boston University Women in Physics Council – President Aug 2023 – Present
Boston University Graduate Women in Science and Engineering – Fitness Coordinator Aug 2023 – Dec 2023
Boston University Physics Diversity Committee – Graduate Subcommittee Member Feb 2022 – Feb 2023
American Physical Society Wikipedia Scientist Course – Article author Mar 2022 - Apr 2022
Cornell Society of Physics Students – Peer Adviser Aug 2018 - May 2019
Cornell Society of Physics Students – Women in Physics Chair Aug 2017 - May 2018
Expanding Your Horizons at Cornell – Presenter Mar 2017, Mar 2018