DOMINIC J. SKINNER

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EDUCATION

2017-present Massachusetts Institute of Technology, Cambridge, MA
PhD student in mathematics advised by Professor Jörn Dunkel
Completed 8 graduate classes with a 5.0 GPA, passed PhD qualifying examinations

2013-2017 Trinity Hall, University of Cambridge, Cambridge, UK
Part III Mathematics (MMath), distinction
Parts I & II Mathematics (BA), 1st class

PUBLICATIONS

H. Jeckel*, F. Díaz-Pascual*, **D. J. Skinner***, B. Song*, E. J. Siebert, E. Jelli, S. Vaidya, J. Dunkel, and K. Drescher. Multispecies phase diagram reveals biophysical principles of bacterial biofilm architectures. bioRxiv:10.1101/2021.08.06.455416.

D. J. Skinner, J. Dunkel. Estimating entropy production from waiting time distributions. arXiv:2105.08681. In press, *Phys. Rev. Lett.* Editors' suggestion.

D. J. Skinner, J. Dunkel. Improved bounds on entropy production in living systems. *Proc. Natl Acad. Sci. U.S.A.*, **118**, e2024300118 (2021).

D. J. Skinner, B. Song, H. Jeckel, E. Jelli, K. Drescher, J. Dunkel. Topological metric detects hidden order in disordered media. *Phys. Rev. Lett.*, **126**, 048101 (2021).
Editors' suggestion and featured in *Physics* magazine.

C. Rackauckas, Y. Ma, J. Martensen, C. Warner, K. Zubov, R. Supekar, **D. J. Skinner**, A. Ramadhan, A Edelman. Universal Differential Equations for Scientific Machine Learning. arXiv:2001.04385.

P. Pearce, B. Song, **D. J. Skinner**, R. Mok, R. Hartmann, P. K. Singh, H. Jeckel, J. S. Oishi, K. Drescher, J. Dunkel. Flow-induced symmetry breaking in growing bacterial biofilms. *Phys. Rev. Lett.*, **123**, 258101 (2019).

J. R. Lister, **D. J. Skinner**, T. M. J. Large. Viscous control of shallow elastic fracture: Peeling without precursors. *J. Fluid Mech.*, **868**, 119-140 (2019).

CONFERENCE PROCEEDINGS

D. J. Skinner, R. Maulik. Meta-modeling strategy for data-driven forecasting. Tackling Climate Change with Machine Learning workshop, NeurIPS 2020. arXiv:2012.00678.

CONTRIBUTED TALKS AND POSTERS

Improved bounds on entropy production in living systems.
Workshop on Stochastic Thermodynamics II 2021 (virtual).

Improved bounds on entropy production in living systems.
APS March Meeting 2021 (virtual).

Meta-modelling strategy for data driven forecasting.
Tackling Climate Change with Machine Learning workshop, NeurIPS 2020 (virtual).

Topological analysis of multicellular structures.
APS March Meeting 2020 (virtual).

Flow-induced symmetry breaking in growing bacterial biofilms.
Theory in Living Systems Meeting, Boston University 2019.

AWARDS AND FELLOWSHIPS

MathWorks Science Fellowship (2020-2021).

Center For The Physics of Biological Function Symposia Travel Award (2020).

NSF Mathematical Sciences Graduate Internship (2020). *Argonne National Laboratory.*

Everett Longstreth Jazz Award (2019).

Emerson Music Scholar (2019-2021).

MIT Presidential Fellowship (2017-2018).

Mayhew Prize (2017). *Top honours in applied mathematics in Part III, University of Cambridge.*

Parks Prize For Mathematics (2017). *Trinity Hall, Cambridge.*

Wylie Prize For Mathematics (2016). *Trinity Hall, Cambridge.*

TEACHING EXPERIENCE

Instructor for computational science and engineering 18.085, MIT, Summer 2021

Teaching assistant for differential equations 18.03, MIT, Fall 2019 and Spring 2020

Mentor for one month directed reading program, MIT, Winter 2020, 2021

Mentor for the research science institute high school program, MIT, Summer 2018, 2019

Volunteer mentor for the graduate-undergraduate math mentoring initiative, MIT, 2020-2021

Mentor for the Cambridge entrance exam study school, Cambridge, UK, Spring 2015

OTHER EXPERIENCE

Research intern at Argonne National Laboratory, working with Dr Romit Maulik on adaptive sampling and meta-modeling methods for scientific machine learning. 8 week internship, Argonne National Laboratory, Chicago, IL, Summer 2020

Research intern at Microsoft Research working on the C-library for Microsoft's Ziria project, a programming language designed for wireless systems. 8 week internship, Microsoft Research, Cambridge, UK, Summer 2015.

PROGRAMMING LANGUAGES

Extensive experience with MATLAB, Julia, and spectral PDE solver Dedalus. Working knowledge of C, CUDA, python, bash.

INTERESTS

Study double bass under Keala Kaumeheiwa. Principal bassist with MIT's Festival Jazz Ensemble. Have toured New York and Puerto Rico with this ensemble, and played with Jacob Collier, Miguel Zenon, amongst others.