

Yohsuke Fukai

Researcher

Nonequilibrium Physics of Living Matter
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Work

- Sep. 2022-present** Postdoctoral Researcher,
Nonequilibrium Physics of Living Matter Riken Hakubi Research Team,
RIKEN Center for Biosystems Dynamics Research.
- Apr. 2019-Sep. 2022** Special Postdoctoral Researcher,
Nonequilibrium Physics of Living Matter Riken Hakubi Research Team,
RIKEN Center for Biosystems Dynamics Research.

Education

- Apr. 2016-Mar. 2019** Ph. D. course, Dept. of Physics, Grad. School of Science, The University of Tokyo
Doctor of Philosophy, Physics, the University of Tokyo, 2019.
- Oct. 2017-Dec. 2017** Visiting student in School of Physics, College of Sciences, Georgia Inst. of Technology.
- Apr. 2015-Sep. 2017** Visiting student in Dept. of Physics, School of Science, Tokyo Inst. of Technology.
- Apr. 2014-Mar. 2016** Master course, Dept. of Physics, Grad. School of Science, The University of Tokyo
Master of Science, Physics, the University of Tokyo, 2016.
- Apr. 2012-Mar. 2014** Bachelor course, Dept. of Physics, Faculty of Science, The University of Tokyo
Bachelor of Science, Physics, the University of Tokyo, 2014.
- Apr. 2010-Mar. 2012** Bachelor course, College of Arts and Sciences, The University of Tokyo.

Teaching Experience

- Oct. 2015-Feb. 2016** Teaching assistant of undergraduate class
"Physics experiment II: Phase transitions" (Liquid crystal experiments),
Dept. of Physics, Faculty of Science, The Univ. of Tokyo.

Grants and Fellowships

Sep. 2024-present	ACT-X Research Area "Life and Information" Japan Science and Technology Agency.
Apr. 2022-present	Grant-in-Aid for Early-Career Scientists Japan society for the promotion of science.
Apr. 2019-Sep. 2022	Special Postdoctoral Researcher Program RIKEN.
Apr. 2017-Mar. 2019	Research Fellow of the Japan Society for the Promotion of Science (DC2) Japan Society for the Promotion of Science.
Sep. 2014-Mar. 2019	Advanced Leading Graduate Course for Photon Science fellowship student The University of Tokyo.

Publications

- Y. T. Fukai et al., *Gene-scale in vitro reconstitution reveals histone acetylation directly controls chromatin architecture*, Nov. 2024, DOI: 10.1101/2024.11.08.622658
- T. A. Katoh et al., "Optical microscopic imaging, manipulation, and analysis methods for morphogenesis research", *Microscopy* **73**, 226–242 (2024) DOI: 10.1093/jmicro/dfad059
- Y. T. Fukai and K. Kawaguchi, "LapTrack: linear assignment particle tracking with tunable metrics", *Bioinformatics* **39**, btac799 (2023) DOI: 10.1093/bioinformatics/btac799
- Y. T. Fukai and K. A. Takeuchi, "Initial perturbation matters: Implications of geometry-dependent universal Kardar-Parisi-Zhang statistics for spatiotemporal chaos", *Chaos: An Interdisciplinary Journal of Nonlinear Science* **31**, 111103 (2021) DOI: 10.1063/5.0071658
- T. Iwatsuka et al., "Direct Evidence for Universal Statistics of Stationary Kardar-Parisi-Zhang Interfaces", *Physical Review Letters* **124**, 250602 (2020) DOI: 10.1103/PhysRevLett.124.250602
- Y. T. Fukai and K. A. Takeuchi, "Kardar-Parisi-Zhang Interfaces with Curved Initial Shapes and Variational Formula", *Physical Review Letters* **124**, 060601 (2020) DOI: 10.1103/PhysRevLett.124.060601
- Y. T. Fukai, "Experimental and numerical investigation of universal fluctuations in out-of-equilibrium interface growth", en, Ph. D. Thesis (the University of Tokyo, Tokyo, Japan, 2018)
- Y. T. Fukai and K. A. Takeuchi, "Kardar-Parisi-Zhang Interfaces with Inward Growth", *Physical Review Letters* **119**, 030602 (2017) DOI: 10.1103/PhysRevLett.119.030602

International Conference Activities

- Yohsuke T. Fukai and Kyogo Kawaguchi, "Reconstitution and characterization of long chromatin array with defined nucleosome modification patterns and positional barcodes", Poster Session presented at "RIKEN BDR Symposium 2024", Kobe, Japan March, 2024.
- Yohsuke T. Fukai and Kyogo Kawaguchi, "Single-molecule observation of long chromatin array reveals modification-pattern-dependent fluctuations", Poster Session presented at "28th International Conference on Statistical Physics, Statphys28", Tokyo, Japan August, 2023.
- Yohsuke T. Fukai and Kyogo Kawaguchi, "Reconstitution and observation of long chromatin array with defined nucleosome modification patterns", Poster Session presented at "RIKEN BDR Symposium 2023", Kobe, Japan March, 2023.

Tingying Peng, Yohsuke Fukai, Timothy Morello, Nicholas Schaub and Yu Liu, “BaSiCPy - a Python tool for microscopy illumination correction”, Poster Session presented at “Bioengineering Solutions for Biology and Medicine 2022”, Munich, Germany July, 2022.

Yohsuke T. Fukai and Kyogo Kawaguchi, “Reconstituting and observing long chromatin with defined nucleosome modification patterns”, Poster Session presented at “RIKEN BDR Symposium 2022”, March, 2022.

Yohsuke T. Fukai, Keiichi Tamai, Hiroki Yamaguchi and Tetsuya Hiraiwa, “Universal interface fluctuations for absorbing-state phase transitions”, Oral Session presented at “27th International Conference on Statistical Physics, Statphys27”, Buenos Aires, Argentina July, 2019.

Yohsuke T. Fukai and Masaki Sano, “Large-scale flow out of spatiotemporal chaos in electroconvection of cholesteric liquid crystal”, Oral Session presented at “APS March Meeting 2019”, Massachusetts, USA March, 2019.

Yohsuke T. Fukai and Kazumasa A. Takeuchi, “Universal Kardar-Parisi-Zhang fluctuations with finite-curvature initial conditions”, Poster Session presented at “International Conference on Advances in Physics of Emergent orders in Fluctuations”, Tokyo, Japan November, 2018.

Yohsuke T. Fukai and Masaki Sano, “Large-scale flow in electroconvection of cholesteric liquid crystal”, Poster Session presented at “Fundamental Problems in Active Matter”, Colorado, USA January, 2018.

Yosuke Fukai and Kazumasa A. Takeuchi, “Kardar-Parisi-Zhang interfaces with curved initial conditions – what exists “between” the universality subclasses?”, Oral Session presented at “International Workshop on Stochastic Thermodynamics and Active Matters”, Beijing, China August, 2016.

Yosuke Fukai and Kazumasa A. Takeuchi, “Between universality subclasses: numerical and experimental results for KPZ interfaces with curved initial conditions”, Poster Session presented at “26th International Conference on Statistical Physics, Statphys26”, Lyon, France July, 2016.

Yosuke Fukai and Kazumasa A. Takeuchi, “Crossover between Kardar-Parisi-Zhang Subclasses in Interfaces with Curved Initial Conditions”, Oral Session presented at “Non-equilibrium dynamics in classical and quantum systems: From quenches to slow relaxations”, Pont-à-Mousson, France July, 2016.

Yosuke Fukai and Kazumasa A. Takeuchi, “Curved KPZ interface in liquid crystal electroconvection and numerical model”, Poster Session presented at “iCeMS International Symposium Hierarchical Dynamics in Soft Materials and Biological Matter”, Kyoto, Japan September, 2015.

Yosuke Fukai and Kazumasa A. Takeuchi, “Kardar-Parisi-Zhang interfaces with finite curvature”, Poster Session presented at “SFS2015 International Symposium on Fluctuation and Structure out of Equilibrium 2015”, Kyoto, Japan August, 2015.

Yosuke Fukai and Kazumasa A. Takeuchi, “Experimental and numerical approaches to universality in growing scale-invariant interfaces”, Poster Session presented at “Summer school: Stochastic processes and random matrices”, les Houches, France July, 2015.

Yosuke Fukai and Kazumasa A. Takeuchi, “Deterministic Spatio-temporal Chaos and Stochastic Fluctuating Interface”, Poster Session presented at “Winter School for Statistical Mechanics / Frontiers of Statistical Mechanics: From Non-equilibrium Fluctuations to Active Matter”, Kyoto, Japan February, 2015.

Seminars

Yohsuke T. Fukai, “Software development toward fine-tunable and automatable bioimage analysis in Python”, Helmholtz Munich (Online), Germany June, 2022.

Yohsuke T. Fukai, “Emergence of large-scale planer flow in electroconvection of cholesteric liquid crystal”, University of Twente, Netherlands February, 2018.

Yosuke Fukai, "Liquid crystal experiment and numerical simulation for curved KPZ interfaces", Université Paris Diderot, France July, 2015.

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