KINJAL DASBISWAS

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EDUCATION

Ph.D. in Physics, University of Florida (Aug 14, 2012)
dissertation: "Topological defects in Superfluids including Supersolid Helium"
supervised by Prof. Alan T. Dorsey
M.Sc. (Integrated) in Physics Indian Institute of Technology, Kanpur (2007)

PROFESSIONAL POSITIONS

Postdoctoral Fellow, Weizmann Institute of Science, Israel, Sep. 2012 - Sep. 2015

Postdoctoral Researcher, James Franck Institute, University of Chicago, Oct. 2015 - Sep. 2018

RESEARCH INTERESTS

Theoretical Soft Matter and Biological Physics:
Cytoskeletal, Cellular and Tissue mechanics; Mechano-chemical processes in biology; Biological active matter; Topological modes in soft matter

PUBLICATIONS

1. "Self-organizing motors divide active liquid droplets" by K. L. Weirich, K. Dasbiswas, T. A. Witten, S. Vaikuntanathan and M. L. Gardel **PNAS 116 (23) 11125-11130 (2019)** bioRxiv
2. "Odd viscosity affects topological waves in magnetized plasmas and chiral active fluids" by A. Souslov, K. Dasbiswas, M. Fruchart, S. Vaikuntanathan and V. Vitelli **Phys. Rev. Lett. 122, 128001 (2019) arXiv:1802.09649v1**
3. "A charge frustrated Ising model to describe layering and screening in ionic fluids" by N. B. Ludwig,K. Dasbiswas, D. V. Talapin and S. Vaikuntanathan. **J. Chem. Phys. 149, 164505 (2018)**
4. "Topological localization in out-of-equilibrium dissipative systems" by K. Dasbiswas, K. K. Mandadapu and S. Vaikuntanathan **PNAS 115 (39), E9031– E9040(2018) arXiv preprint: 1706.04526v1**.
5. "Osmotic shock-triggered assembly of highly-charged, nanoparticle-supported membranes" by P. J. Chung, L. H. Hwang, K. Dasbiswas, A. F. Leong, and K. Y. C. Lee **Langmuir, 34 (43), pp 13000–13005 (2018)**.
6. "Theory of epithelial cell shape transitions induced by mechanoactive chemical gradients" by K. Dasbiswas, E. Hannezo and N. S. Gov. **Biophys. J. 114 (4), 968–977 (2018)** arXiv preprint: 1709.01486 .
7. "Ordering of myosin II filaments driven by mechanical forces: experiments and theory" by K. Dasbiswas, S. Hu, F. Schnorrer, S. A. Safran and A. D. Bershadsky, *review article* **Phil. Trans. R. Soc. B 373: 20170114 (2018)**.
8. "Stable colloids in molten inorganic salts" by H. Zhang, K. Dasbiswas, N.B. Ludwig, G. Han, B. Lee, S. Vaikuntanathan and D. V. Talapin, **Nature 542, 328–331 (2017)**.

9. "Liquid behavior of cross-linked actin bundles" by K. L. Weirich, S. Banerjee, K. Dasbiswas, T. A. Witten, S. Vaikuntanathan and M. L. Gardel **PNAS 114 9, 2131-2136 (2017)**.

10. "Long range self-organization of cytoskeletal myosin-II filament stacks" by S. Hu, K. Dasbiswas, Z. Guo, Y.-H. Tee, V. Thiagarajan, P. Hersen, T.-L. Chew, S. A. Safran, R. Zaidel-Bar and A. D. Bershadsky, **Nature Cell Biology 19, 133 – 141 (2017)**.

11. "Mechanobiological induction of long-range contractility by diffusing biomolecules and size scaling in cell assemblies" by K. Dasbiswas*, E. Alster and S. A. Safran, **Scientific Reports 6, 27692 (2016)**.

12. "Substrate stiffness-modulated registry phase correlations in cardiomyocytes maps structural order to coherent beating" by K. Dasbiswas, S. Majkut, D. E. Discher, S. A. Safran, **Nature Communications 6, 6085 (2015)**.

13. "Dislocation-induced superfluidity in a model supersolid" by D. Goswami, K. Dasbiswas, C.-D. Yoo and Alan T. Dorsey, **Phys. Rev. B 84, 054523 (2011)**, (arXiv:1103.0057).

14. "Bound states of edge dislocations: The quantum dipole problem in two dimensions" by K. Dasbiswas, D. Goswami, C.-D. Yoo and Alan T. Dorsey, **Phys. Rev. B 81, 064516 (2010)**, (arXiv:0912.3760).

CONFERENCE PRESENTATIONS AND SEMINARS

Invited Talks:

1. " Biological liquid crystal droplets that mimic cell division " *Soft/Bio Seminar* at UC Santa Barbara, 2019

2. "How mechanical forces order molecular motors in the noisy interior of cells and does this help?" *Physics Colloquium* at Calpoly, San Luis Obispo, 2019

3. "Molecular Motors use Mechanical Forces to Self-organize in the Noisy Interior of Cells: Does this Help?" *Physics Colloquium* at UC Merced, 2019

4. "Theory links biological ordering to physical forces" at the Center for Theoretical Biological Physics, Rice University, 2018.

5. "Physical interactions and order in biological matter" at the UCLA Center for Biological Physics, University of California, LA, 2018.

6. "Mechanogens: Inducing long-range contractility in cells by mechano-diffusive molecules" at Mechanobiology Institute, Singapore, 2017.

7. "Mechanobiological induction of long-range contractility by diffusing biomolecules and size scaling in cell assemblies" at Biosoft Frontiers 2016, Israel and Cell Physics 2016, University of Saarland, Germany.

8. "Theory links cardiomyocyte structure and function", at the Physcell 2015, EMBO conference.

9. "Contractile stress and morphogen diffusion in developing cell assemblies", *invited talk* at the World Congress of Biomechanics, Boston 2014

TEACHING

"Computation and Modeling in Biophysics", graduate special elective, UC Merced, Fall 2018.
Recitation for a graduate level Soft Matter Physics course, Weizmann Institute of Science, 2015, Discussion leader (6 semesters) and laboratory instructor (3 semesters) for introductory physics courses at the University of Florida

PROFESSIONAL SERVICE

Reviewer for *Biophysical Journal, Soft Matter, Physical Review Letters, Scientific Reports*