Mahesh C. Gandikota

Contact Information

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Present Employment

Postdoc in the Cacciuto Group,
Department of Chemistry, Columbia University, New York, NY, USA.

Education

Ph.D., Physics, Syracuse University, Syracuse, NY, USA **2021**

Thesis Advisor: Prof. J. M. Schwarz

Integrated M.Sc., Physics, National Institute of Science Education and Research, Orissa, India **2015**

Thesis Advisor: Prof. Somendra Bhattacharjee, Ashoka University, Haryana, India

G.P.A.: 8.2/10.0

Twelfth grade board exam, National College, Bangalore, India **2010**

Marks: 81%

Tenth grade board exam, HJKP, Bangalore, India **2008**

Marks: 97.4%

Employment

Postdoc, Department of Chemistry, Columbia University, NY, USA **2021–Present**

Research Assistant, Department of Physics, Syracuse University, NY, USA **2016–2021**

Teaching Assistant, Department of Physics, Syracuse University, NY, USA **2015–2020**

Overview of Scientific Work

- **Monte carlo** simulations for a spin model describing the martensitic phase transition in the tail-sheath of T4 bacteriophage.
- **Molecular dynamics** simulations of dry active matter.
- Numerical elastic **energy minimizations** to study strain-induced rigidity transitions in under-constrained spring networks.
- Constructed simple models for **biological systems** to study problems such as the compression stiffening of a single cell and morphogenesis of cerebellum folds.

Publications

8. M. C. Gandikota, Shibananda Das and A. Cacciuto, "Spontaneous crumpling of active spherical shells", *in review.*
7. M. C. Gandikota and A. Cacciuto, "The crumpling transition of active tethered membranes", Soft Matter, 19.28 (2023).
6. M. C. Gandikota and A. Cacciuto, "Rectification of confined soft vesicles containing active particles", Soft Matter, 19.2 (2023).
5. M. C. Gandikota and A. Cacciuto, "Effective forces between active polymers", Physical Review E, 105, 034503 (2022).

4. M. C. Gandikota Amanda Parker and J. M. Schwarz, "Rigidity transitions in zero-temperature polygons", Physical Review E, 106, 055003 (2022).
3. M. C. Gandikota and J. M. Schwarz, "Buckling without bending morphogenesis: Nonlinearities, spatial confinement, and branching hierarchies", New Journal of Physics, 23, 063060 (2021).
2. M. C. Gandikota, Katarzyna Pogoda, Anne van Oosten, T. A. Engstrom, A . E. Patteson, P. A. Janmey, J. M. Schwarz, "Loops versus lines and the compression stiffening of cells", Soft Matter, 16(18), 4389-4406 (2020).
1. S. Paul, M. C. Gandikota, "Fourier Transform of Electric Signal using Kundt's Tube", Student Journal of Physics, 6(2), 95-100 (2016).

Teaching Experience

Recitations/Substitute Lecturer

PHY 216, General Physics II for honors and majors **Spring & Fall 2017, Spring 2018**
PHY 212, General Physics II **Spring & Fall 2016**
PHY 211, General Physics I **Fall 2015**

Labs

AST 101, Our Place in the Universe **Fall 2020**
PHY 102, Major Concepts of Physics II **Spring 2019, 2020**

Grading/Substitute Lecturer

PHY 635, Physical Cell Biology **Fall 2018**
PHY 360, Vibrations, Waves and Optics **Fall 2018**

Guest Lecturer

CHEM G4221, Statistical Thermodynamics **Fall 2022**

Mentoring

Undergraduate Students

Alexandra Brown (REU program) **Summer 2016**

Languages

Human: English (fluent), Hindi, Telugu (mother tongue), Kannada (native).

Computer: Bash, C++, Python, Mathematica.

Markup: LaTeX, Markdown, HTML, CSS.

Operating System: Linux, Windows.

Awards

Summer Graduate Fellowship, Soft Matter Program, Syracuse University **Summer 2017**

Henry Levinstein Fellowship, Physics Department, Syracuse University **Summer 2016**

All India Rank 24, Graduate Aptitude Test in Engineering (GATE) **2015**

Summer Research fellow, Indian Academies of Sciences **Summer 2012**

INSPIRE fellowship, Department of Science and Technology, Government of India **2010-15**

Conferences/ Workshops

Gordon Research Seminar & Conference, contributed posters. **2023**

Northeast Complex Fluids and Soft Matter workshop, contributed talk. **2023**

APS March Meeting, contributed talks. **2017, 2018, 2019, 2020**

Soft Matter Summer School, University of Massachusetts, Amherst, poster. **2017**

Professional Activities and Service

Experiment Leader, Girls Science Day, Columbia University. **2023**

Organizer, Soft Matter Journal Club, Syracuse University. **2019-2020**

Moderator, APS Conference for Undergraduate Women in Physics, Syracuse University. **2016**

Volunteer, Photographer, Active and Smart Matter conference, Syracuse University. **2016**

Volunteer, Science Day, annual joint outreach program to high school students, NISER, IOP, Bhubaneswar. **2011, 2012, 2014**

Non-Academic Activities

President, Argentine Tango Club, Syracuse University. **Fall 2017 - Fall 2020**

Editorial Board, Jignasa, annual magazine of NISER, Bhubaneswar. **2014**

References

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