

Dr. Mamata Sahoo
UGC Assistant Professor
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Professional Biography:

Dr. Mamata Sahoo works on theoretical Statistical Physics and Bio-Physics. She did her PhD with Prof. Arun M Jayannavar in the field of Non-equilibrium Statistical Physics from Institute of Physics, Bhubaneswar and the PhD degree was awarded by Homi Bhaba National Institute (HBNI), Mumbai India. Following her PhD, Mamata worked as a Max-Planck postdoctoral fellow in the theory & biosystem group of Max-Planck Institute for Colloids and Interfaces, Potsdam, Germany with Prof. Stefan Klumpp. During her postdoc, she was mainly working in the field of bio-physics, especially on the transcriptional elongation and exclusion models. Later on, she was awarded for the INSPIRE Faculty Fellowship scheme and worked in CSIR-NIIST as a Inspire Faculty for about two and half years, later in School of Physics, Indian Institute of Science Education & Research, Thiruvananthapuram for about two years. Since June-2018 she has been working as a UGC Assistant Professor (UGC-FRP) in the Department of Physics, Kerala University.

In addition, Mamata has visited several research Institutes, attended several conferences and workshops and delivered many invited talks across India and abroad. She is also a recipient of many fellowships and awards.

Educational Qualifications:

- Ph.D (Physics): Institute of Physics, Bhubaneswar, HBNI, India
Thesis Title: Driven Non-equilibrium Systems: Ratchets, Fluctuation theorems and related phenomena.
- Post MSc (Advanced Physics): Institute of Physics, Bhubaneswar
- MSc (Physics): Utkal University, Bhubaneswar, India
- BSc (Physics): Fakir Mohan University, Odisha, India

Fellowships/Awards or Achievements:

1. Selected as UGC Assistant Professor under UGC-FRP Scheme (Cycle-IV, 2017).
2. INSPIRE Faculty Fellowship Award (IFA-13 PH-66) (2014).
3. DST Fast Track Women Fellowship (SR/FTP/PS-199/2012) (2013).

4. Qualified Graduate Aptitude Test in Engineering (GATE) (2004) (Rank-143).
5. Qualified Joint Entrance Screening Test (JEST) for PhD program in physics (2004) (Rank-44).
6. Qualified TIFR written exam for PhD program in Physics (2004, 2005).
7. Qualified IISC exam for PhD program in Physics (2004).
8. Gold Medallist (Rank-1) in BSc. Physics (Honors), Fakir Mohan University, Odisha, India (2001).
9. Best Graduate Award from the Royal Society, Fakir Mohan University, Odisha, India (2001).
10. Best Physics Honours Award from Fakir Mohan University, Odisha, India (2001).
11. National and Merit Scholarship in Intermediate (1998).
12. National and Merit Scholarship in High School (1996).
13. Reviewer of certain national and international journals.

Experience:

- UGC Assistant Professor: Department of Physics, University of Kerala, Trivandrum (June 2018-Present)
- Inspire Faculty: Indian Institute of Education and Research, Thiruvananthapuram (Sept. 2016 – June 2018)
- Inspire Faculty: CSIR-NIIST Thiruvananthapuram (Jan. 2014 – Sept. 2016)
- Research Scientist: IITMK, Thiruvananthapuram (Feb. 2013 - July 2013)
- Visiting Scientist: Institute of Physics, Bhubaneswar (Nov. 2012 – Jan. 2013)
- Max-Planck Post-doctoral Fellow: Max Planck Institute for Colloids & Interfaces, Potsdam, Germany (May 2010 – Aug. 2012)
- Guest Scientist: Max-Planck Institute for Colloids & Interfaces, Potsdam, Germany from May 2014 to June 2014
- Guest Scientist: Max Planck Institute for the Physics of Complex Systems, Dresden, Germany from Nov. 2009 to Dec. 2009.

Memberships in Academic or Professional bodies:

1. Member of German Physical Society (2012-2013)

Research Interest:

Non-equilibrium Statistical Physics (Brownian Motors, Ratchet dynamics, Exclusion Models etc.) and Bio-Physics (Transcription, Molecular Motors etc.)

Selected Publications:

1. *Asymmetric exclusion process with a dynamic roadblock particle and open boundaries*
M. Sahoo and S. Klumpp
J.Phys. A: Math. Theor. **49**, 315001 (2016).

2. *Dynamic blockage in an exclusion process*
M. Sahoo, J. J. Dong, and S. Klumpp
J. Phys. A: Math. Theor. **48**, 015007 (2015).
(Selected as special inclusion in IOP Select & Inclusion in the Journal of Physics A, Highlights of 2015 collection)
3. *Backtracking dynamics of RNA polymerase: Pausing and error correction*
M. Sahoo and S. Klumpp
J. Phys. Cond. Mat. **25**, 374104 (2013).
(Special section on the physics of protein motility and motor Proteins)
4. *Transcriptional proofreading in dense RNA polymerase traffic*
M. Sahoo and S. Klumpp
Europhys. Lett. **96**, 60004 (2011).
5. *Quantum Work Relations under trial Hamiltonians:*
A.K. Pati, **M. Sahoo** and B. Pradhan
Phys. Rev. E **82**, 031112 (2010).
6. *Charged particle in magnetic field: Jarzynski's Equality*
A.M. Jayannavar and **M. Sahoo**
Phys. Rev. E **75**, 032102 (2007).
7. *Stoke's efficiency in temporally rocked ratchets*
R. Krishnan, J. Chacko, **M. Sahoo** and A. M. Jayannavar
Journal of Statistical Mechanics: Theory and Experiment: P06017 (2006).