Rajesh Singh

Curriculum Vitae

The Institute of Mathematical Sciences
Chennai 600113, India
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Research interests

Statistical physics, stochastic processes, soft condensed matter, active matter, complex and active fluids, numerical and computational methods

Education

2012–17 PhD Physics, **The Institute of Mathematical Sciences, Chennai, India**
PhD thesis: Microhydrodynamics of active colloids
Supervisor: Professor Ronojoy Adhikari

2010–12 M.Sc. Physics, **Indian Institute of Technology Kanpur, India**, *CPI – 8.5/10*
Master thesis: Design and Study of Erbium Doped Fiber Ring Laser
Supervisor: Professor R. Vijaya

2007–10 B.Sc. (Honours) Physics, **Hindu College, University of Delhi, India**, *Percentage – 79*

Publications

Preprints or under review

8. Direct verification of the fluctuation-dissipation relation in viscously coupled oscillators. S. Paul, A. Laskar, R. Singh, B. Roy, D. Ghosh, and R. Adhikari, arXiv:1707.00660, 2017.

7. Fast Bayesian inference of the multivariate Ornstein-Uhlenbeck process. R. Singh, D. Ghosh, and R. Adhikari, arXiv:1706.04961, 2017.

6. Generalized Stokes laws for active colloids and their applications. R. Singh, and R. Adhikari, arXiv:1603.05735, 2016.

Published or accepted

5. Fluctuating hydrodynamics and the Brownian motion of an active colloid near a wall. R. Singh, and R. Adhikari, Eur. J. Comp. Mech. (invited article), 2017 .
4. Fast Bayesian inference of optical trap stiffness and particle diffusion. S. Bera, S. Paul, R. Singh, D. Ghosh, A. Kundu, A. Banerjee and R. Adhikari, Sci. Rep. 7, 41638, 2017
3. Universal Hydrodynamic Mechanisms for Crystallization in Active Colloidal Suspensions. R. Singh and R. Adhikari, Phys. Rev. Lett., 117(22):228002, 2016.
2. Many-body microhydrodynamics of colloidal particles with active boundary layers. R. Singh, S. Ghose and R. Adhikari, J. Stat. Mech. P06017, 2015.
1. Phase-plane analysis of driven multi-lane exclusion models. V. Yadav, R. Singh and S. Mukherji, J. Stat. Mech. P04004, 2012.

Software

PyStokes — PyStokes is a Cython library for computing Stokes flow produced by active colloidal spheres and their rigid body motion.

PyBISP — PyBISP is a pure Python package for Bayesian Inference of Stochastic Processes.

Work experience

2016 Teaching assistant: Statistical physics - I, Jan-May

2015 Teaching assistant: Statistical physics - II, Aug-Dec

2015 Teaching assistant: Statistical physics - I, Jan-May

2015 Volunteer as student organiser in Soft Matter Young Investigators Meetings - III

2015 Volunteer as student organiser in Soft Matter Young Investigators Meetings - I and II

2014 Teaching assistant: Classical field theory, Jan-May

2014 Organised students seminars - Soft condensed matter physics : Jul 2013 - Dec 2014

2014 Organised students seminars - Python programming for sciences : Jan-May

Other qualifications

2012 JEST (Joint entrance screening test for PhD in India): All India Rank - 6

2011 CSIR Scholarship in Physics, JOINT CSIR-UGC: All India Rank - 25.

2010 JAM - 2010 for admissions in IITs for M.Sc. (Physics): All India Rank - 20.

2010 National top 1% candidate at National Graduate Physics Examination

2009 First prize in “Kabaad se juggad" event in National Science Fest, University of Delhi

Computer skills

Programming — Python, Cython, C/C++, Matlab, Mathematica, Julia, Fortran

Talks and posters presented

2016 International Conference on Soft Materials, ICSM-2016, Jaipur, India, December 2016

2016 Universal hydrodynamic mechanisms for crystallization in active colloidal suspensions, May 2016, IASBS-ICTP School on Active Matter and Chemotaxis, Zanjan, Iran

2016 High performance computing , Feb 2016, The Institute of Mathematical Sciences, Chennai

2016 International Complex Fluids Conference (CompFlu-2016), Pune, India, January 2016

2015 Many-body microhydrodynamics of colloidal particles with active boundary layers, July 2015, International Conference on Discrete Simulation of Fluid Dynamics, Edinburgh, 2015, University of Oxford and University of Durham.

2015 PyStokes, Jan 2015, Chennai Python Users Group

2015 Soft Matter Young Investigators Meeting - II, Puducherry, India, December 2015

2014 Eighth Symposium on Complex Fluids, Bangalore, India, December 2014

Conference and schools attended

2016 International Conference on Soft Materials, ICSM-2016, Jaipur, India, December 2016

2016 IASBS-ICTP School on Active Matter and Chemotaxis, Zanjan, Iran, May 2016

2016 International Complex Fluids Conference (CompFlu-2016), Pune, India, January 2016

2015 International Conference on Discrete Simulation of Fluid Dynamics, DSFD-2015, Edinburgh, July 2015.

2015 Soft Matter Young Investigators Meeting - II, Puducherry, India, December 2015

2014 Eighth Symposium on Complex Fluids, Bangalore, India, December 2014

2014 Soft Matter Young Investigators Meet - I, Puducherry, India, January 2014

2013 SERB School and Symposium on Complex Fluids - IIT Delhi, Dec 2013

2013 RRI school on Statistical Physics - RRI Bangalore, India. April 2013

Referees

Professor Ronojoy Adhikari
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Webpage: https://www.imsc.res.in/users/rjoy
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Professor Ganesh Subramanian
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