SAEED AHMAD

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EDUCATION

Ph.D. in Physics **2016-2022**
Indian Institute of Technology Bombay, Mumbai, India
Thesis Topic: First passage in biased diffusion with Stochastic Resetting

M.Sc. in Physics **2014-2016**
Indian Institute of Technology Indore, Indore, India
Thesis Topic: Photoproduction Cross-Section of the η' meson with CLASS

B.Sc. in Physics, Chemistry, Mathematics **2016-2022**
Jamia Millia Islamia, Delhi, India

TEACHING EXPERIENCE

General Physics Lab Instructor, IIT Bombay **2017-2020**
- Conducted introductory lectures on various experiments
- Administered pre-quiz assessments
- Provided comprehensive assistance to lab manuals and experiments
- Evaluated and graded lab reports

General Physics Examine, IIT Bombay **2017-2020**
- Administered exams through offline line and online

RESEARCH EXPERIENCE

Postdoctoral Fellow **2022-Present**
University of California, California, USA
- **Study of Viruses Through Physics :** I was responsible for developing a numerical method to study Viruses assembly and disassembly. We could find the kinetic pathways of empty capsid using trimer subunits as building blocks. We explored parameter space for which closed capsid can be formed. We introduced the first passage time description and found the optimal parameter for which the process of capsid formation can be expedited. In doing that, we developed very efficient code in Python and learnt several packages.

Senior Research Fellow **2017-2020**
Indian Institute of Technology Bombay, Mumbai, India
- **Optimization In Stochastic Environment:** I have introduced various optimization techniques to achieve target in fluctuating systems in d −dimensional space. We solved various complex problems through exact analytical methods.
- **Numerical method:** I have developed numerical techniques through which one can solve problems in complicated situations using Mathematica.
- **Study of First Passage Time in Barrier Crossing Problem:** Through our numerical and analytical methods we found various new phenomena such as multiple continuous and finite range discontinuous transitions and tri-critical points which is rare in soft-matter.
- **Optimization in Magnetic System:** Using the Ising model simulation we found optimal parameter space in magnetic systems.

Master Research **2015-2016**
Indian Institute of Technology Indore, Indore, India

- **Photoproduction of particles in High Energy:** I did data analysis on photoproduction of masonic particles in a high energy regime in collaboration with the CLAS detector in Jefferson Lab. I found the cross-section for several energy regimes.

PUBLICATIONS

- **Ahmad, S**, Das, D, et. al., 'First passage of a particle in a potential under stochastic resetting: A vanishing transition of optimal resetting rate', *Physical Review E*, **99**, 022130 (2019) (Citations 73)

- **Ahmad, S**, Das, D, 'Role of dimensions in first passage of a diffusing particle under stochastic resetting and attractive bias, *Physical Review E*, **102**, 032145 (2020) (Citations 10)

- **Ahmad, S**, Rijjal, K, Das, D, 'First passage in the presence of stochastic resetting and a potential barrier, *Physical Review E*, **105**, 044134 (2022) (Citations 13)

- **Ahmad, S**, Das, D, 'Comparing the roles of time overhead and spatial dimensions on optimal resetting rate vanishing transitions, in Brownian processes with potential bias and stochastic resetting, *Journal of Physics A: Math. and Theor.*, **56**, 104001 (2023)

SCHOOL AND CONFERENCES

- **Poster:** Biased random walk with stochastic resetting
Indian Statistical Physics Community Meeting, International Centre for Theoretical Sciences (ICTS)

- **School:** Bangalore School on Statistical Physics-X, ICTS

AWARDS AND ACHIEVEMENTS

- Received **Gold Medal,** in 2014 in B.Sc. for first position in science department in Jamia Millia Islamia

- Qualified **Joint Admission test for M.Sc.**, in 2014 in Physics

- Qualified **CSIR-JRF**, 2017 in Physics

- Qualified **GATE**, 2017 in Physics

- Received fellowship for **Teaching Assistantship** (TA) at IIT Bombay

SKILLS

Technical Skills: Python, C, Mathematica, Programming Language, OVITO, Microsoft office, Latex, Gnuplo, Application, Linux, Windows, macOS.
Soft Skills: Quick Learner, Good Communicator, Teamwork, Leadership, Oral Presentation

INTERESTS

- Mathematical modelling to systems in Biophysics
- Numerical Simulation of Biophysics problems and many others
- Student Centred teaching
- Mental Challenges & Puzzles
- Physical Activities such as swimming, badminton, cricket, etc.
- Multiculturalism
- Human Psychology