Tamal Kumar Mukherjee

Department of Physics
Adamas University
tamal.k.mukherjee@gmail.com
tamalkumar.mukherjee@adamasuniversity.ac.in

Current Position

- Associate Professor, Adamas University

Education

- PhD, 2009, Bose Institute. Jadavpur University,
  Advisor: Prof. Sanjay K Ghosh
  Thesis: Study of Strongly Interacting Matter Under Extreme Conditions.
- M. Sc. in Physics, 2001, Calcutta University
- B. Sc. (Hons.) in Physics, 1999, Calcutta University

Research Interest

- Effective models of QCD
- QCD phase transition
- Cosmological & Astrophysical implication of QCD phase transition
- Effects of electro-magnetic field on strongly interacting matter, observables in heavy-ion collision and its implication in Astrophysics and cosmology
- Application of Machine Learning algorithms to understand various Physical phenomena

Highlights of the Academic Achievements

- **Teaching & Research Experience:**
  a) 16 **years of research experience** in India and abroad.
  b) **10 years of teaching and related academic experience** in Visva-Bharati (a Central University founded by Nobel Laureate Gurudev Rabindranath Tagore) and Adamas University.
- **Awards:**
  a) Awarded **Prestigious Ramanujan Fellowship** by SERB, Department of Science and Technology, INDIA.
  b) Awarded **Senior Research Associateship (Scientists' Pool Scheme)** from CSIR, INDIA.
  c) Awarded **Chinese Academy of Sciences (CAS) fellowship** for young foreign scientists, CHINA.
- **Publication:**
  a) Our paper in Phys.Rev. D73 (2006) 114007 has received **263 citations** so far (source: http://inspirehep.net/, author: Tamal K Mukherjee).
  b) Our paper in Phys.Rev. D77 (2008) 094024 has received **107 citations** so far (source: http://inspirehep.net/, author: Tamal K Mukherjee).
  c) Our paper in Phys.Rev. D82 (2010) 034015 has received **33 citations** so far (source: http://inspirehep.net/, author: Tamal K Mukherjee).
- **Projects:**
  a) **Completed two projects as Principal Investigator** (PI): funded by National Natural Science Foundation of China (NSFC) (Budget of 200,000 RMB ~ 20 lakh INR) and Chinese Academy of Sciences (Budget of 150,000 RMB ~ 15 lakh INR).
  b) **Completed project as PI** funded by SERB, DST under Ramanujan Fellowship with Budget of INR 35 lakh.

Research Experience Details

From	To	Designation	University/Organisation	Nature of Experience
08/2019	Present	Associate Professor & Ramanujan Fellow	Adamas University	Research & Teaching
08/2014	08/2018	Ramanujan Fellow	Visva-Bharati	Research & Teaching
06/2014	08/2014	Research Scientist B	Bose Institute, Indo-FAIR coordination Centre	Research
01/2014	06/2014	Visiting Research Fellow (Without Pay)	Centre For Astroparticle Particle Physics and Space Science (CAPSS), Bose Institute	Research
01/2013	12/2013	Post Doctoral Fellow	Institute of High Energy Physics, TPCSF, Chinese Academy of Sciences (CAS)	Research
01/2012	12/2012	CAS Fellowship for Young Foreign Scientists	Institute of High Energy Physics, TPCSF, Chinese Academy of Sciences (CAS)	Research
01/2010	12/2011	Post Doctoral Fellow	Institute of High Energy Physics, TPCSF, Chinese Academy of Sciences (CAS)	Research
08/2009	12/2009	Visiting Research Fellow	Institute of High Energy Physics, TPCSF, Chinese Academy of Sciences (CAS)	Research

Teaching Experience Details:

From	To	Subjects Taught at the Undergraduate Level	Subjects Taught at the Postgraduate Level
08/2014	08/2019	1. Selected Topics on General Properties of Matter, Classical Mecahincs, Static Electricity, (Subjects Taught to students having Physics as Allied Subject) in Visva-Bharati. 2. Conducted Laboratory Classes in Visva-Bharati.	1 . Selected topics on Advanced Quantum mechanics (Subjects Taught to students of 5 year Integrated M. Sc.) in Visva-Bharati.
08/2019	Present	1. Statistical Mechanics, Classical Dynamics, Special Theory of Relativity, Programming Classes based on Python	1. Special Theory of Relativity, Classical Electrodynamics, Classical Mechanics, Quantum Field Theory, Programming Classes based on Python

Administrative Experience:

1. **PhD Coorindator** for School of Basic and Applied Sciences, Adamas University.
2. Member of the **Faculty Council**, School of Basic and Applied Sciences, Adamas University.

Publication

Articles Published in Journals

- Hybrid Regression and Explainable AI for Phase Transition Analysis of two flavour Quark Matter
  Pradipta K Banerjee, Tamal K Mukherjee
  To be Published in: Journal of Subatomic Particles and Cosmology

- Study of Phase Transition in Two-Flavour Quark Matter at Finite Volume
  Anirban Lahiri, Tamal K. Mukherjee, Rajarshi Ray
  Published in: Springer Proc.Phys. 261 (2021) 543-549

- Particle temperature and the Chiral Vortical Effect in the early universe.
  Tamal K Mukherjee, Soma Sanyal
  Published in: Modern Physics Letters A32, 1750178 (2017)
  No. of Citation - 3 (Source: http://inspirehep.net/)

- Chiral phase transition with mixing between scalar quarkonium and tetraquark,
  Tamal K Mukherjee, Mei Huang
  Published in: Physical Review D 89, 076002 (2014)
  No. of Citation - 4 (Source: http://inspirehep.net/)

- Low-lying scalars in an extended linear Sigma model
  Tamal K Mukherjee, Mei Huang, Qi-Shu Yan
  Published in: Physical Review D 86, 114022 (2012)
  No. of Citation - 14 (Source: http://inspirehep.net/)

- Dressed Polyakov loop and flavor dependent phase transitions.
  Fukun Xu, Hong Mao, Tamal K. Mukherjee, Mei Huang.
  Published in: Physical Review D 84, 074009 (2011)
  No. of Citation - 19 (Source: http://inspirehep.net/)

- QGP Susceptibilities from PNJL Model.
  Sanjay K. Ghosh, Tamal K. Mukherjee, Munshi G. Mustafa, Rajarshi Ray.
  Published in: Indian Journal of Physics, 85, 87-91 (2011).
  No. of Citation - 4 (Source: http://inspirehep.net/)

- Chiral condensate and dressed Polyakov loop in the Nambu-Jona-Lasinio model
  Tamal K. Mukherjee, Huan Chen, Mei Huang.
  Published in Physical Review D 82, 034015 (2010).
  No. of Citation - 33 (Source: http://inspirehep.net/)

- PNJL model with a Van der Monde term
  Sanjay K. Ghosh, Tamal K. Mukherjee, Munshi G. Mustafa, Rajarshi Ray.
  Published in Physical Review D 77, 094024 (2008).
  No. of Citation - 107 (Source: http://inspirehep.net/)

- Susceptibilities and speed of sound from PNJL model
  Sanjay K. Ghosh, Tamal K. Mukherjee, Munshi G. Mustafa, Rajarshi Ray
  Published in: Physical Review D 73, 114007 (2006).
  No. of Citation - 263 (Source: http://inspirehep.net/)

- A Consistent Quasiparticle Picture of Quark-Gluon-Plasma and the Velocity of Sound.
  Sanjay K. Ghosh, Tamal K. Mukherjee, Sibaji Raha.
  Published in: Modern Physics Letters A 21, 2067 (2006).
  No. of Citation - 5 (Source: http://inspirehep.net/)

Articles Published in Conference Proceedings

- Sigma meson and lowest possible glueball candidate in an extended linear Sigma model
  Tamal K Mukherjee, Mei Huang, Qi-Shu Yan
  Published in: AIP Conference Proceedings, 171, 1492 (2012)
  No. of Citation - 2 (Source: http://inspirehep.net/

- Interplay between chiral and deconfinement phase transitions
  Fukun Xu, Huan Chen, Tamal K Mukherjee, Mei Huang
  Published in: EPJ Web of Conferences, 13, 2004 (2011)
  No. of Citation - 5 (Source: http://inspirehep.net/)

Articles Published As Book Chapter

- Chiral symmetry breaking and restoration with mixing between quarkonium and tetraquark
  Tamal K. Mukherjee, Mei Huang.
  Appeared in the book "Chiral Symmetry in Hadrons and Nuclei"
  Edited by: L. S. Geng, J. Meng, Q. Zhao, B. S. Zou,
  Published by: World Scientific, ISBN 978-981-4618-21-2.

- Model Study of Speed of Sound and Susceptibilities in Quark- Gluon Plasma
  Sanjay K. Ghosh, Tamal K. Mukherjee.
  Appeared in the book "Physics and Astrophysics of Hadrons and Hadronic Matter"
  Edited by: A. B. Santra, Published by: Narosa Publishing House, ISBN 978-81-7319-881-6.

Awards, Grants Received

- **Ramanujan Fellowship**, SERB-DST, 2013, Joined in August, 2014.
- **Senior Research Associateship** (Scientists' Pool Scheme) from CSIR 2013.
- "**The Research Fund for International Young Scientists**" under National Natural Science Foundation of China (NSFC) 2012-2013.
- **Chinese Academy of Sciences (CAS) fellowship** for young foreign scientists 2012.

Details of Externally Funded Projects

- Title of the Project: QCD Phase Diagram at Finite Temperature and Density
  Role: As PI
  Sponsor: Chinese Academy of Sciences
  Budget: 150,000 RMB.

- Title of the Project: Nature of the Low-lying Scalar meson and its implication for QCD Phase Transition
  Role: As PI
  Sponsor: National Natural Science Foundation of China (NSFC)
  Budget: 200,000 RMB.

- Title of the Project: Effect of Magnetic Field on Strongly Interacting Matter
  Role: As PI (Under Ramanujan Fellowship)
  Sponsor: SERB, DST
  Budget: Rs. 35,00,000 for 5 years.

Other Examinations Passed

- Passed Graduate Aptitude Test in Engineering (GATE) 2002 with 93.62 Percentile (in Physics)
- Passed Joint CSIR-UGC National Eligibility Test (NET) for Lectureship (in Physics), 2002

Other Relevant Information

- Have reviewed paper for Physical Review D
- Have reviewed paper for Indian Journal of Physics
- Guided Students for their M. Sc. & B.Sc. Projects
- Our paper in Phys.Rev. D73 (2006) 114007 has received 263 citations so far (source: http://inspirehep.net/).
- Our paper in Phys.Rev. D77 (2008) 094024 has received 107 citations so far (source: http://inspirehep.net/).
- Our paper in Phys.Rev. D82 (2010) 034015 has received 33 citations so far (source: http://inspirehep.net/).
- Worked as a Treasurer of "Chatim", a non-profit organization, providing poor students in the department of Physics, Visva-Bharati, with scholarship.
- Have experience of discharging duty as examiner and paper setter.

Personal Information

- Date and Place of Birth: January 1, 1978, Kolkata, India
- Marital Status: Married
- Nationality: Indian

Reference

- Prof. Sanjay K Ghosh (Thesis Supervisor)
  Department of Physics and Center for Astroparticle Physics and Space Science, Bose Institute
  Unified Academic Campus
  Bose Institute
  EN-80, Sector V
  Bidhan Nagar
  Kolkata - 700 091, India
  Tel: +919831296681
  E-mail: sanjay@jcbose.ac.in

- Prof. Sibaji Raha
  Chairman of the Joint Scientific Council of the GSI and FAIR, Germany
  Senior Professor & Former Director, Bose Institute
  Bose Institute
  EN-80, Sector V
  Bidhan Nagar
  Kolkata - 700 091, India
  Tel: +919830150222
  Email: sibaji.raha@jcbose.ac.in

- Prof. Mei Huang
  Theory Division, Institute of High Energy Physics, TPCSF, Chinese Academy of Sciences.
  19 Yuquan Rd, Shijingshan Qu, Beijing Shi, China, 100049
  Tel: +8618600197031
  E-mail: huangm@ihep.ac.cn

- Prof. Munshi Golam Mustafa
  Theory Division, Saha Institute of Nuclear Physics
  1/AF Bidhannagar
  Kolkata - 700 064, India
  Tel: +919007435091
  Email: munshigolam.mustafa@saha.ac.in