

# **Provash Mali, M. Sc., Ph. D.**

**Associate Professor**



## **Member of Learned Societies:**

Life Member of the Indian Physics Association and  
Life Member of the Indian Physical Society

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**Subject Specialisation** : High-Energy Physics, Computational Physics

**Areas of Research Interest** : High-energy Heavy-ion Collisions

**No. of Ph.D. students: (a) Supervised: Nil (b) Ongoing: 2**

**No. of M.Phil. students: (a) Supervised: NA (b) Ongoing: NA**

**No. of Publications: (a) Journal publications : 27**

**(b) Conference Proceedings : 31**

## **Professional experiences:**

1. **Teaching (12 years):** Nuclear and Particle Physics, Atomic and Molecular Physics, Quantum Field Theory, Computational Methods in Physics and Programming
2. **Research (14 years):** Nuclear interactions, High-energy heavy-ion collisions, Fractals and Time Series Analysis
3. Organized an Outreach Programme of the Department of Atomic Energy, Govt. of India.
4. Coordinator of JEST 2018 (NBU Centre)
5. **Acted as Reviewer for the following journals:** (i) Physica A: Statistical Mechanics and its Applications, (ii) Physics Letters A, (iii) International Journal of Bifurcation and Chaos, (iv) Int. J. Mod. Phys. E, etc..

## **Administrative Experiences:**

1. Member: Anti-ragging Committee (21.09.2015 to 20.09.2017)
2. Member: Awareness about Ragging Committee (19.11.2015 to till date)
3. Member: Under Graduate Board of Studied in Physics, Cooch Behar Panchanan Barma University

## Selective List of Publications:

### *Peer reviewed journal publications:*

1. **P. Mali**, S. Ghosh, A. Mukhopadhyay, System size dependence of net-charge fluctuation in nucleus-nucleus collisions at FAIR energies, *J. Phys. G* **46**, vol.12, 125107 (2019).
2. Soumya Sarkar, **Provash Mali**, Somnath Ghosh, and Amitabha Mukhopadhyay, Radial flow in a multi phase transport model at FAIR energies, *Advances in High Energy Physics* **2018**, 7453752 (2018).
3. S. K. Manna, P. K. Haldar, **P. Mali**, A. Mukhopadhyay, and G. Singh, Wavelet analysis of particle density functions in nucleus-nucleus interactions, *Int. J. Mod. Phys. E* **27**, 1850009 (2018).
4. **P. Mali**, S. K. Manna, A. Mukhopadhyay, P. K. Haldar, and G. Singh, Multifractal analysis of multiparticle emission data in the framework of visibility graph and sandbox algorithm, *Physica A* **493**, 253–266, (2018).
5. Somnath Ghosh, **Provash Mali**, and Amitabha Mukhopadhyay, Net-charge fluctuation in Au+Au collisions at energies available at the Facility for Antiproton and Ion Research using the UrQMD model, *Physical Review C* **96**, 024912 (2017).
6. Soumya Sarkar, **Provash Mali**, and Amitabha Mukhopadhyay, Azimuthal anisotropy in particle distribution in a multiphase transport model, *Physical Review C* **96**, 024913 (2017).
7. S. Sarkar, **P. Mali**, A. Mukhopadhyay, Simulation study of elliptic flow of charged hadrons produced in Au+Au collisions at energies available at the Facility for Antiproton and Ion Research, *Physical Review C* **95**, 014908 (2017).
8. **P. Mali**, A. Mukhopadhyay, S. K. Manna, P. K. Haldar, and G. Singh, Multifractal analysis of charged particle distributions using horizontal visibility graphs and sandbox algorithm, *Modern Physics Letters A* **32**, 1750024 (2017).
9. **P. Mali**, S. K. Manna, P. K. Haldar, A. Mukhopadhyay, G. Singh, Detrended analysis of shower track distribution in nucleus-nucleus interactions at CERN SPS energy, *Chaos, Fractals and Solitons* **94**, 86-94 (2017).
10. **P. Mali**, A. Mukhopadhyay and G. Singh, Multifractal detrended moving average analysis of particle density function in relativistic nuclear collisions, *Physica A* **450** (2016) 323-332.
11. **Provash Mali**, Multifractal detrended moving average analysis of global temperature records, *Journal of Statistical Mechanics: Theory and Experiment*, **013201** (2015).
12. **P. Mali**, A. Mukhopadhyay, S. Sarkar and G. Singh, Azimuthal correlation and collective behaviour in nucleus-nucleus collisions, *Physics of Atomic Nuclei* **78(2)** (2015) 258-267.
13. **P. Mali** and A. Mukhopadhyay, Long-range memory and multifractality in gold market, *Physica Scripta* **90** (2015) 035209.
14. **P. Mali**, S. Sarkar, S. Ghosh, A. Mukhopadhyay and G. Singh, Multifractal detrended fluctuation analysis of phase-space fluctuation in relativistic nuclear collisions, *Physica A* **424** (2015) 25-33
15. **Provash Mali**, Multifractal characterization of global temperature anomalies, *Theoretical and Applied Climatology*, **121** (2015) 641-648.
16. **P. Mali** and A. Mukhopadhyay, Multifractal characterization of gold market: multifractal detrended fluctuation analysis, *Physica A* **413** (2014) 361-372.

17. **P. Mali**, A. Mukhopadhyay S. Sarkar and G. Singh, Azimuthal structure of charged particle emission in  $^{28}\text{Si-Ag(Br)}$  interaction at 14.5A GeV and  $^{32}\text{S-Ag(Br)}$  interaction at 200A GeV, *Int. J. Mod. Phys. E* **23(5)** (2014) 1450027.
18. **Provash Mali**, Fluctuation of gold price in India versus global consumer price index, *Fractals*, **22 1** (2014) 1450004.
19. **P. Mali**, S. Sarkar, A. Mukhopadyay and G. Singh, Wavelet analysis of shower track distribution in high-energy nucleus-nucleus collisions, *Advances in High Energy Physics*, **2013** (2013) 759176.
20. **P. Mali**, A. Mukhopadhyay and G. Singh, Multifractal analysis of charged particle distribution in  $^{28}\text{Si-Ag/Br}$  interaction at 14.5A GeV, *Fractals* **20, 3** (2012) 1.
21. **P. Mali**, A. Mukhopadhyay and G. Singh, Self-affine two-dimensional intermittency in  $^{28}\text{Si-Ag/Br}$  interaction at 14.5A GeV, *Acta Phys. Pol.* **B 43** (2012) 463.
22. S. Kundu, C. Bhattacharya, K. Banerjee, T. K. Rana, S. Bhattacharya, A. Dey, T. K. Ghosh, G. Mukherjee, J. K. Meena, **P. Mali**, S. Mukhopadhyay, D. Pandit, H. Pai, S. R. Banerjee, and D. Gupta, P. Banerjee, S. Kumar, A. Shrivastava, A. Chatterjee, K. Ramachandran, K. Mahata, S. K. Pandit and S. Santra, Complex-fragment emission in low-energy light-ion reactions, *Physical Review C* **85** (2012) 064607.
23. **P. Mali**, A. Mukhopadhyay and G. Singh, Factorial correlator and short-range correlation of charged particles produced in  $^{28}\text{Si-Ag/Br}$  interaction at 14.5A GeV, *Physica Scripta.* **85** (2012) 065202.
24. **P. Mali**, A. Mukhopadhyay and G. Singh, Intermittency and erraticity of charged particles produced in  $^{28}\text{Si-Ag/Br}$  interaction at 14.5 A GeV, *Can. J. Phys.* **89** (2011) 949.
25. **Provash Mali**, Ground state properties of extreme neutron rich isotopes observed: a relativistic mean field approach, *Int. J. Mod. Phys. E* **20** (2011) 2293.
26. K. Banerjee, T.K. Ghosh, S. Kundu, T.K. Rana, C. Bhattacharya, J.K. Meena, G. Mukherjee, **P. Mali**, D. Gupta, S. Mukhopadhyay, D. Pandit, S.R. Banerjee, S. Bhattacharya, T. Bandyopadhyay, and S. Chatterjee, Variation of neutron detection characteristics with dimension of BC501A neutron detector, *Nucl. Inst. and Meth. A* **608** (2009) 440.
27. T. K. Ghosh, K. Banerjee, C. Bhattacharya, S. Bhattacharya, S. Kundu, **P. Mali**, J. K. Meena, G. Mukherjee, S. Mukhopadhyay, and T. K. Rana, Sharp change over from compound nuclear fission to shape dependent quasi fission, *Physical Review C* **79** (2008) 054607.

### **Conference Proceedings**

1. S. Sarkar, P. Mali, A. Mukhopadhyay, Initial state longitudinal asymmetry at FAIR-CBM energy, Proc. DAE Symp. on Nucl. Phys. 64 (2020) 748.
2. I. Pal, J. Thakur, A. Mukhopadhyay, P. Mali, Forward-backward correlation at FAIR energy in UrQMD, Proc. DAE Symp. on Nucl. Phys. 64 (2020) 770.
3. J. Thakur, I. Pal, A. Mukhopadhyay, P. Mali, AMPT simulation of  $\Phi$ -measure in Au+Au collision at 30AGeV, Proc. DAE Symp. on Nucl. Phys. 64 (2020) 772.
4. S. Ghosh, P. Mali, A. Mukhopadhyay, Cumulant ratios of conserved charges in the UrQMD model, Proc. DAE Symp. on Nucl. Phys. 64 (2020) 758.

5. P. Mali, A. Mukhopadhyay, Event-by-event fluctuations of  $K/\pi$  and  $p/\pi$  in Au+Au collisions at 30A GeV, CBM-Progress Report 2019, p.185, ISBN 978-3-9815227-8-5, DOI: 10.15120/GSI-2020-00904.
6. S. Ghosh, P. Mali, A. Mukhopadhyay, Cumulant ratios of conserved quantities at FAIR energy in the UrQMD model, Proc. DAE Symp. on Nucl. Phys. 63 (2018) 940.
7. S. Ghosh, P. Mali, and A. Mukhopadhyay, Centrality dependence of cumulants of net-charge distributions at FAIR energy, Proc. DAE Symp. on Nucl. Phys. 62 (2017) 900.
8. S. Sarkar, P. Mali, and A. Mukhopadhyay, System size dependence of collective flow at FAIR energy, Proc. DAE Symp. on Nucl. Phys. 62 (2017) 858.
9. S. Sarkar, P. Mali, S. Ghosh, and A. Mukhopadhyay, Azimuthal anisotropy of hadrons in AMPT model at FAIR energy, GSI Report GSI-2017-00564, Page 190-191 (2017) (ISBN 978-3-9815227-4-7).
10. P. Mali, S. K. Manna, A. Mukhopadhyay, P. K. Haldar, G. Singh, Fractality in multiparticle production-a graph theoretical approach, Proc. of the DAE Symp. on Nucl. Phys. 61 (2016) 768.
11. S. Sarkar, S. Ghosh, P. Mali, A. Mukhopadhyay, Simulation results on elliptic flow at FAIR energies, CBM Progress Report 2014 (ISBN 978-3-9815227-2-3)
12. P. Mali, A. Mukhopadhyay, S. Sarkar, S. Ghosh, Charge balance function in pp collision at  $\sqrt{s} = 200$  GeV, Proceedings of the DAE Symp. on Nucl. Phys. 59 (2014) 750.
13. S. Sarkar, S. Ghosh, P. Mali, A. Mukhopadhyay, Elliptic flow in Au-Au collision at 20A GeV, Proc. of the DAE Symp. on Nucl. Phys. 59 (2014) 764.
14. Provasi Mali, Fission barriers in actinides and its parameter dependence in mean field theory, Proc. Of the DAE Symp. on Fission, 2014.
15. P. Mali, S. Sarkar, S. Ghosh, A. Mukhopadhyay and G. Singh, Detrended fluctuation analysis in multiparticle production, Proc. Of the DAE Symp. on Nucl. Phys. 58 (2013) 702.
16. P. Mali, S. Sarkar, S. Ghosh, A. Mukhopadhyay and G. Singh, Collective flow in nucleus-nucleus collisions, Proc. Of the DAE Symp. on Nucl. Phys. 58 (2013) 694.
17. Pakrashi, P. Mali and A. Mukhopadhyay, Numerically modelling Bose-Einstein correlation, Proc. Of the DAE Symp. on Nucl. Phys. 57 (2012) 824.
18. P. Mali, A. Mukhopadhyay, G. Singh, Factuality in  $^{28}\text{Si-Ag/Br}$  interaction at 14.5A GeV, Proc. Of the DAE Symp. on Nucl. Phys. 57 (2012) 782.
19. P. Mali, A. Mukhopadhyay and G. Singh, Wavelet analysis in  $^{28}\text{Si-Ag/Br}$  interaction at 14.5A GeV, Proc. Of the DAE Symp. on Nucl. Phys. 57 (2012) 784.
20. P. Mali, A. Mukhopadhyay and G. Singh, 2d intermittency in  $^{28}\text{Si-Ag(Br)}$  interaction at 14.5A GeV, Proc. Of the DAE Symp. on Nucl. Phys. 56 (2011) 996.
21. P. Mali et al., Azimuthal structure of particle emission in  $^{28}\text{Si-Ag(Br)}$  interaction at 14.5A GeV, Proc. Of the DAE Symp. on Nucl. Phys. 56 (2011) 994.
22. P. Mali in S. Kundu et al., Dissipative collision studied in  $^{11}\text{B}+^{28}\text{Si}$ ,  $^{12}\text{C}+^{27}\text{Al}$ ,  $^{12}\text{C}+^{28}\text{Si}$ , Proc. Of the DAE Symp. on Nucl. Phys. 56 (2011) 486.
23. P. Mali in A. Dey et al., Excited states of  $^{28}\text{Si}$  and the spectroscopic factor, Proc. Of the DAE Symp. on Nucl. Phys. 56 (2011) 460.

24. P. Mali, A. Mukhopadhyay, and G. Singh, Ring/Jet-like structure in particle emission in  $^{28}\text{Si-Ag}(\text{Br})$  interaction at 14.5A GeV/c, Exploring the Cosmos, Ed. A. Bhadra, LAMBERT Academic Pub, 2011, p-119.
25. P. Mali, A. Mukhopadhyay, and G. Singh, Factorial correlator in  $^{28}\text{Si-Ag/Br}$  collision at 14.5A GeV/c, Proc. Of the DAE Symp. on Nucl. Phys. 55 (2010) 618.
26. P. Mali, A. Mukhopadhyay, and G. Singh, Intermittency in  $^{28}\text{Si-Ag/Br}$  interaction at 14.5A GeV/c, Proc. Of the DAE Symp. on Nucl. Phys. 55 (2010) 616.
27. P. Mali, A. Mukhopadhyay and G. Singh, Ring and Jet-like structure in particle emission in  $\text{Si-Ag/Br}$  interaction at 14.5A GeV/c, DAE-BRNS High-Energy Physics Symposium, Jaipur, 2010 (Abstract).
28. P. Mali, Ground state properties of some new isotopes: Relativistic Mean Field approach, Proc. Of the DAE Symp. on Nucl. Phys. 55 (2010) 198.
29. P. Mali in T. K.Rana et al., Study of light particle emission in  $\alpha$  like and non- $\alpha$  like nuclei, Proc. Of the DAE Symp. on Nucl. Phys. 53 (2008) 501.
30. S. Kundu, P. Mali et al., Entrance channel effects on fragment emission, Proc. Of the DAE Symp. on Nucl. Phys. 53 (2008) 493.
31. P. Mali in A. Dey et al., Study of fragment emission in  $^{12}\text{C}+^{27}\text{Al}$ ,  $^{28}\text{Si}$  reactions, Proc. Of the DAE Symp. on Nucl. Phys. 52 (2007) 305.