

Dr. MAHFUZUR RAHAMAN



Designation: Assistant Professor in Physics (WBES)
Qualifications: Ph. D
Vidwan ID : 522279

Brief Introduction: I earned my M.Sc. degree from West Bengal State University in 2013, and soon after, I began my teaching career as a guest lecturer at Basirhat College, where I worked for one and a half years. In 2015, I joined the Variable Energy Cyclotron Centre as a Junior Research Fellow and, in 2017, was promoted to Senior Research Fellow, under the supervision of Prof. Jan-e Alam. In August 2020, I joined the West Bengal Education Service at Darjeeling Government College, and later transferred to Maulana Azad College in January, 2025.

Current Teaching: Teaching students of Physics (Honours) and Physics (GE) courses as per CBCS and NEP curricula.

Research Interests: Transport properties of Quark-Gluon Plasma
Relativistic Hydrodynamics
Thermal Field Theory.

Awards/Recognitions:

- (1) Cleared National Level Examinations: JEST (2015), CSIR-NET (2015), GATE (2014, 2015). Research Fellowship (2015-2020) was awarded by Department of Atomic Energy (DAE), Govt. of India.
- (2) Awarded Council of Scientific and Industrial Research CSIR Foreign Travel Grant to attend and present research work in the ECT* Doctoral Training Programme (DTP), The European Centre for Theoretical Studies in Nuclear Physics and Related Areas (ECT*) in Trento, Italy (2018).
- (3) Awarded Homi Bhabha National Institute Foreign Travel Grant to present research work in Heidelberg University (Heidelberg, Germany), (2019).
- (4) Awarded a short term “visiting scientist” fellowship by Johann Wolfgang Goethe University (Frankfurt, Germany), (2019).

Publications:

- (1) Contribution of Kaon component in viscosity and conductivity of hadronic medium.
Mahfuzur Rahaman, Snigdha Ghosh, Sabyasachi Ghosh, Sourav Sarkar, Jan-e Alam.
[Physical Review C 97, 035201\(2018\)](#), [arXiv: 1708.08300](#).
- (2) Effects of causality on the fluidity and viscous horizon of quark -gluon plasma.
Mahfuzur Rahaman, Jan-e Alam.
[Physical Review C 97, 054906 \(2018\)](#), [arXiv: 1712.09175](#).
- (3) Dispersion and suppression of sound near the QCD critical point.
Md Hasanujjaman, **Mahfuzur Rahaman**, Abhijit Bhattacharyya, Jan-e Alam.
[Physical Review C 102, 034910 \(2020\)](#), [arXiv: 2003.07575](#).
- (4) Phenomenological Tsallis distribution from thermal field theory.
Mahfuzur Rahaman, Trambak Bhattacharyya, Jan-e Alam.
[International Journal of Modern Physics A. 36, 20, 2150154 \(2021\)](#), [arXiv:1906.02893](#).
- (5) Effect of magnetic screening mass on the diffusion of heavy quarks.
Mahfuzur Rahaman, Santosh K. Das, Jan-e Alam, Sabyasachi Ghosh.
[International Journal of Modern Physics E 30 \(2021\) 12, 2150093 \(2021\)](#), [arXiv:2001.07071](#).
- (6) Dynamical spectral structure of density fluctuation near QCD critical point.
Md Hasanujjaman, Golam Sarwar, **Mahfuzur Rahaman**, Abhijit Bhattacharyya, Jan-e Alam.
[European Physical Journal A 57, 283 \(2021\)](#), [arXiv: 2008.03931](#).
- (7) The fate of nonlinear perturbations near the QCD critical point.
Golam Sarwar, Md Hasanujjaman, **Mahfuzur Rahaman**, Abhijit Bhattacharyya, Jan-e Alam.

[Physics Letter B 820 \(2021\) 136583](#), [arXiv: 2012.12668](#).

(8) Nonlinear waves in a hot, viscous and non-extensive quark-gluon plasma.

Golam Sarwar, Md. Hasanujjaman, Trambak Bhattacharyya, **Mahfuzur Rahaman**, Abhijit Bhattacharyya, Jan-e Alam.

[European Physical Journal C 82 \(2022\) 3, 189](#), [arXiv: 2109.11166](#).

(9) Correlation of density fluctuation in a magnetized QCD matter near the critical end point

Mahfuzur Rahaman, Md. Hasanujjaman, Golam Sarwar, Abhijit Bhattacharyya, Jan-e Alam.

[European Physical Journal C 84 \(2024\) 3, 279](#), [arXiv: 2306.06905](#).

Participation in Seminars / Conferences / Workshops:

(1) Shear viscosity of hot hadrons -contribution from strange mesons (Poster).

62nd Department of Atomic Energy (DAE)- Board of Research in Nuclear Science (BRNS) Symposium on Nuclear Physics, Patiala, India. 20-24th December, 2017.

(2) Effect of causality on relativistic fluid (Talk).

CNT workshop on effective field theory of hadrons: vacuum to medium (2018), Variable Energy Cyclotron Centre, Kolkata. 12-17th March, 2018.

(3) Effect of causality on dissipation in relativistic fluid (Talk) Quantum Chromodynamics under extreme conditions of nonzero temperature and density.

The European Centre for Theoretical Studies in Nuclear Physics and Related Areas (ECT*), Trento, Italy. 28th May-22nd June 2018.

(4) Effect of causality on dissipation in relativistic fluid (Poster).

63rd Department of Atomic Energy (DAE)- Board of Research in Nuclear Science (BRNS) Symposium on Nuclear Physics, Mumbai, India. 10 - 14th December, 2018.

(5) QGP in external magnetic field: effect on heavy quark potential (Poster).

Quantum System in Extreme Condition, Heidelberg University, Germany. 23 -27th September, 2019.

(6) Thermal Field Theory of the Tsallis statistics (Talk).

DAE-BRNS symposium on Contemporary and Emerging Topics in High Energy Nuclear Physics (CETHENP 2019). Variable Energy Cyclotron Centre. 25th-27th November 2019.

(7) Shear viscosity of nuclear matter in the presence of magnetic field (Talk).

The DAE-BRNS High Energy Physics (HEP) Symposium.

School of Physical Sciences, National Institute of Science Education and Research (NISER), Odisha, India. 14th -18th December, 2020.

(8) Role of magnetic screening mass on heavy-quark diffusion. (Poster).

The DAE-BRNS High Energy Physics (HEP) Symposium.

National Institute of Science Education and Research (NISER), Odisha, India. 14-18th December, 2020.

(9) Correlation of dynamical density fluctuation in magnetic field (Talk).

International Conf. on Physics and Astrophysics of Quark-Gluon Plasma, 7-10 Feb, 2023, Puri, India.

(10) Density fluctuations near the QCD critical point in presence of a magnetic field (invited Talk).

Meeting on the physics of ALICE, CBM and STAR (MPACS),

29-30th January, 2025, Variable Energy Cyclotron Centre, Kolkata, India.

Contact Details:

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West Bengal 700013.

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Links:

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