

## CV



**Dr./Mr./Mrs./Name:** **Dr. Mahfuzur Rahaman**  
**Designation in (subject):** **Assistant Professor in Physics**  
**Highest qualification:** **Ph. D**  
**Contact details/ Office address:** Dept. of Physics, Darjeeling Govt. College, Leborg Cart Road,  
Darjeeling, 734101.  
Contact No. 8926128302

**Vidwan ID (Mandatory):** **522279**  
**Email id (official):** **mahfuzurahaman01@gmail.com**  
**Date of joining to this institution\*:** **10/08/2020**  
**Date of joining W.B.E.S.:** **10/08/2020**  
**Previous position(s) held/ Additional charges (if any):**

**Senior Research Fellow (2017-2020)**  
Variable Energy Cyclotron Centre (VECC)  
**Junior Research Fellow (2015-2017)**  
Variable Energy Cyclotron Centre (VECC.)  
1/AF, Canal Side Rd, 1/AF, Bidhannagar, Kolkata, West Bengal 700064.  
**Guest Lecturer (2014-2015)**  
Basirhat College, Basirhat, Kolkata 743412.

**Teaching experience in years & months:** **3 Years and 9 months.**

### **Fellowship, Awards, Recognition and Honours (if any):**

(1) Cleared National Level Examinations: JEST (2015), CSIR-NET (2015), GATE (2014, 2015).  
Research Fellowship (2015-2020) 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).

### **Courses taught:**

Mathematical Methods in Physics  
Electricity and Magnetism  
Nuclear and Particle Physics  
Nonlinear Dynamics  
Python.

### **Research area/ interest:**

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

### **List of publications-**

#### **\*Peer reviewed journals:**

(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) (<https://journals.aps.org/prc/pdf/10.1103/PhysRevC.97.035201>).

arXiv: 1708.08300, (<https://arxiv.org/pdf/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) (<https://journals.aps.org/prc/pdf/10.1103/PhysRevC.97.054906>),

arXiv: 1712.09175, (<https://arxiv.org/pdf/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), (<https://journals.aps.org/prc/pdf/10.1103/PhysRevC.102.034910>).

arXiv: 2003.07575, (<https://arxiv.org/pdf/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),

(<https://www.worldscientific.com/doi/abs/10.1142/S0217751X21501542?journalCode=ijmpa>).

arXiv:1906.02893, (<https://arxiv.org/pdf/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),

(<https://www.worldscientific.com/doi/abs/10.1142/S0218301321500932?journalCode=ijmpe>).

arXiv:2001.07071, (<https://arxiv.org/pdf/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) (<https://link.springer.com/article/10.1140/epja/s10050-021-00589-3>).

arXiv: 2008.03931, (<https://arxiv.org/pdf/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 (<https://www.sciencedirect.com/science/article/pii/S0370269321005232?via%3Dihub>).

arXiv: 2012.12668, (<https://arxiv.org/pdf/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, (<https://link.springer.com/article/10.1140/epjc/s10052-022-10122-5>).

arXiv: 2109.11166, (<https://arxiv.org/pdf/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. (<https://link.springer.com/content/pdf/10.1140/epjc/s10052-024-12642-8>).

arXiv: 2306.06905. (<https://arxiv.org/pdf/2306.06905>).

## \*Conference proceedings:

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

**Mahfuzur Rahaman**, Snigdha Ghosh, Sabyasachi Ghosh, Sourav Sarkar, Jan-e Alam.

Proceedings of the 62nd DAE-BRNS Symposium on Nuclear Physics 62, 886-887 (2017).

(<http://sympnp.org/proceedings/62/E42.pdf>).

(2) Effect of causality on dissipation in relativistic fluid **Mahfuzur Rahaman**, Jan-e Alam.

Proceedings of the 63rd DAE-BRNS Symposium on Nuclear Physics 63 (2018) 926-927.

(<http://sympnp.org/proceedings/63/E5.pdf>).

(3) Recent progresses in the "Dynamics of QCD Matter" .

Amaresh Jaiswal et. al.

International Journal of Modern Physics E 30 (2021) 02, 2130001.

(<https://www.worldscientific.com/doi/abs/10.1142/S0218301321300010>).

arXiv: 2007.14959.

(4) The study of the propagation of nonlinear linear wave in QGP:

a possible tool to distinguish the extensive and non-extensive thermodynamic background .

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

Proceedings of the 65th DAE-BRNS Symposium on nuclear physics, 636-637.

(<http://sympnp.org/proceedings/65/E9.pdf>).

(5) Nonlinear waves in the search for QCD critical point .

Golam Sarwar, Md. Hasanujjaman, Trambak Bhattacharyya, **Mahfuzur Rahaman**, Abhijit Bhattacharyya, Jane Alam.  
Proceedings of the 65th DAE-BRNS Symposium on nuclear physics, 638-639.

(<http://sympnp.org/proceedings/65/E10.pdf>).

**\*Books/chapters in books etc. (if any): NA**

**Google Scholar link/ ResearchGate link/ ORCID ID ((if any) :**

Google Scholar link: <https://scholar.google.com/citations?user=VJf1fvcAAAAJ&hl=en>

Research Gate link: <https://www.researchgate.net/profile/Mahfuzur-Rahaman>

arXiv link: <https://arxiv.org/search/nucl-th?searchtype=author&query=Rahaman%2C+M>

Inspire HEP link: <https://inspirehep.net/authors/1644028>

ORCID ID: <https://orcid.org/0000-0003-0343-8705>

**Presentations/ attended in conferences/ workshops/seminars/symposium etc:**

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

62 nd Department of Atomic Energy (DAE)- Board of Research in Nuclear Science (BRNS) Symposium on Nuclear Physics, Patiala, India.  
20-th December, 2017-24th 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.  
12th March, 2018-17th 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, 2018-22nd 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.  
10th December, 2018- 14th December, 2018.

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

Quantum System in Extreme Condition, Heidelberg University, Germany.  
23rd September, 2019-27th 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 November, 2019-27th 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 December, 2020 -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.  
14th December, 2020 -18th December, 2020.

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

International Conference on Physics and Astrophysics of Quark-Gluon Plasma,  
7-10 February, 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), 29-30 January,  
Variable Energy Cyclotron Centre, Kolkata, India.

**Details regarding participation in FIP/OP/RC:**

(1) UGC Sponsored Refresher Course in Teacher Education (RC) (21/08/2021-04/09/2021).

(2) UGC Sponsored Faculty Induction Programme (FIP) (15/11/2023-19/12/2023).