Dr. Rajat Tripathi

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CONTACT INFORMATION

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EDUCATION

Indian Institute of Technology (ISM) Dhanbad, Dhanbad, Jharkhand

Ph.D., Applied Mathematics, *(*Awarded: September 2017)

- Thesis Topic: *Mathematical Modelling of Hydromagnetic Fluid Flow Problems*

M.N.N.I.T Allahabad, Allahabad U.P

M.Sc., Mathematics and Scientific Computing, 2010-2012

- *CPI: 8.1*

University of Allahabad, Allahabad U.P

B.Sc., Mathematics, Physics, Electronics, 2007-2010

- *Percentage: 61.3*

TEACHING AND RESEARCH INTERESTS:

- Ordinary and Partial Differential Equations, Real Analysis, Numerical Analysis, Functional Analysis, Mathematical Physics.
- Magneto-Fluid Dynamics, Heat and Mass Transfer, Thin Film Flows, Nanofluid flows.

AWARDS

- International Travel award under Young Scientist category to present paper in 7th International Symposium on Advances in Computational Heat Transfer at **University of Naples, Fedrico II, Napoli, Italy** May-June 2017
- Cleared GATE in Mathematics with AIR 291. 2012
- Availed UGC Research Fellowship to do Ph.D. March 2013-July 2017
- Best Paper Presentation Award in the Research Scholars Meet (RSM-2014) held at IIT (ISM) Dhanbad March 2014

EXPERIENCE

Laboratory Classes July 2013 - May 2015

Co-instructor of Digital Electronics and Computer Organization Laboratory classes of 5 Year Integrated M. Tech (Mathematics & Computing) and 2 Year M.Sc. (Mathematics & Computing) in the Department of Applied Mathematics, IIT (ISM) Dhanbad.

Teaching

Assistant Professor at REC Rewa (M. P.) Jan. 2018- May 2018

Assistant Professor at NIT Jamshedpur June 2018- Present

Courses Taught

Real Analysis to M.Sc. students at NIT Jamshedpur.
Partial Differential Equations to M.Sc. students at NIT Jamshedpur.
Engineering Mathematics-I to B.Tech. 1st year students at NIT Jamshedpur.
Engineering Mathematics-II to B.Tech. 1st year students at NIT Jamshedpur.
Engineering Mathematics-III to B.Tech. 3rd sem. students at NIT Jamshedpur.

PG Thesis Supervision

- **Student Name**: Ms. Soni Yadav (2019)
  Dissertation Title: Hydromagnetic Flow of an Electrically Conducting Fluid in a Porous Medium.
- **Student Name**: Mr. Vicky Kumar (2020)
  Dissertation Title: Hydromagnatic Natural Convection Flow in a Non-Darcy Medium past an inclined stretching Sheet.
- **Student Name**: Mr. Deepak Kumar (2021)
  Dissertation Title: Magnetohydrodynamic flow of an electrically conducting fluid past a vertical plate with Hall effects.
- **Student Name**: Mr. Niroj Kumar Sahu (2021)
  Dissertation Title: On the natural convection flow of a conducting fluid over a vertical wall within hydromagnetic consideration.

Ph.D. Thesis Supervision

- **Student Name**: Mr. Vinit Kr. Chaurasiya (pursuing)
  Tentative Title: Magnetohydrodynamic Flow Problems of non-Newtonian Fluids. (In joint guidance with Dr. Ramayan Singh)
- **Student Name**: Ms. Abha Kumari (pursuing)
  Tentative Title: Numerical Investigations of Thin Film Flows

Refereed Journal Publications

1. A. Kumari and **R. Tripathi**. "Rise of a bubble through a self re-wetting fluid under the combined influence of gravity driven convection and Marangoni convection", *Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering*, (Accepted for publication, 2021) (SCI Indexed)

2. **R. Tripathi**, V. K. Chaurasiya, A. Kumar and R. Singh "Minimization of entropy production in the transient thermocapillary flow of $Al_2O_3 - Cu$ hybrid nanoliquid film over a disk", *Indian Journal of Physics*, (Published: May, 2021) (DOI: https://doi.org/10.1007/s12648-021-02100-6) (SCI Indexed)

3. **R. Tripathi** "Marangoni convection in the transient flow of hybrid nanoliquid thin film over a radially stretching disk", *Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering*, (Published: April, 2021), (DOI: https://doi.org/10.1177/09544089211008052) (SCI Indexed)

4. A. Kumar, **R. Tripathi**, R. Singh and V. K. CHaurasiya "Simultaneous effects of nonlinear thermal radiation and Joule heating on the flow of Williamson nanofluid with entropy generationy", *Physica A: Statistical Mechanics and its Applications*, Vol. 551 (1). (2020). (SCI Indexed)

5. A. Kumar, **R. Tripathi**, R. Singh and M. A. Sheremet "Entropy generation on double diffusive MHD Casson nanofluid flow with convective heat transfer and

activation energy Indian Journal of Physics", *Indian Journal of Physics*, (Accepted for publication, 2020) (SCI Indexed)

6. A. Kumar, **R. Tripathi**, and R. Singh. "Entropy generation and regression analysis on stagnation point flow of Casson nanofluid with Arrhenius activation energy", *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, Vol. 41 (8). (2019). (SCI Indexed)

7. A. Kumar, **R. Tripathi**, R. Singh and G. S. Seth. "Three-dimensional magneto-hydrodynamic flow of micropolar CNT-based nanofluid through a horizontal rotating channel: OHAM analysis", *Indian Journal of Physics*, https://doi.org/10.1007/s12648-019-01460-4 (2019) (SCI Indexed)

8. G. S. Seth, R. Kumar and **R. Tripathi** "Thermo-diffusion effects on the magneto-hydrodynamic natural convection flow of a chemically reactive Brinkman type nanofluid in a porous medium", *Bulgarian Chemical Communications*, Vol. 51 (2), pp. 168-179, DOI: 10.34049.bcc.51.3.4577.(2019) (SCI Indexed)

9. G. S. Seth, M. K. Mishra and **R. Tripathi**. "MHD free convective heat transfer in a Walter's liquid-B fluid past a convectively heated stretching sheet with partial wall slip, *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, Vol. 40 (2), pp. 103 (2018) (SCI Indexed)

10. **R. Tripathi**, G.S. Seth, and M.K. Mishra, "Double Diffusive Flow of a Hydromagnetic Nanofluid in a Rotating Channel with Hall Effect and Viscous Dissipation: Active and Passive Control of Nanoparticles." *Advanced Powder Technology*, Vol. 28, pp. 2630-2641. (2017) (SCI Indexed)

11. G. S. Seth, M. K. Mishra and **R. Tripathi**. "Modeling and analysis of mixed convection stagnation point flow of nanofluid towards a stretching surface: OHAM and FEM approach *Computational and Applied Mathematics*, Vol. 37 (4), pp. 4081-4103, (2017) (SCI Indexed).

12. G.S. Seth, **R. Tripathi**, and M.K. Mishra, "Hydromagnetic Thin film flow of a Casson fluid in a non-Darcy porous medium with Joule Dissipation and Naviers partial slip" *Applied Mathematics and Mechanics*, DOI 10.1007/s10483-017-2272-7 (2017). (SCI Indexed)

13. G.S. Seth, **R. Tripathi**, and M.M. Rashidi, "Hydromagnetic Natural convection flow in a non-Darcy medium with Soret and Dufour effects past an inclined stretching sheet." *Journal of Porous Media*, Vol. 20 (10), pp. 941-960 (2017). (SCI Indexed)

14. G.S. Seth, **R. Tripathi**, R. Sharma, and A.J. Chamkha, "MHD Double Diffusive Natural Convection Flow Over Exponentially Accelerated Inclined Plate." *Journal of Mechanics*, Vol. 33 (01),pp. 87-99, (2017). (SCI Indexed)

15. G.S. Seth, **R. Tripathi** and R. Sharma, "An Analysis of MHD Natural Convection Heat and Mass Transfer Flow with Hall effects of a Heat Absorbing, Radiating and Rotating Fluid over an Exponentially Accelerated Moving vertical Plate with Ramped Temperature" *Bulgarian Chemical Communications*, Vol. 48 (04),pp. 770-778, (2016) (SCI Indexed)

16. G.S. Seth, **R. Tripathi** and R. Sharma, "Unsteady MHD Natural Convection Flow with Hall Effects of a Heat Absorbing Fluid Past an Exponentially Accelerated Vertical Plate with Ramped Temperature." *International Journal of Heat and Technology*, Vol. 33 (03),pp. 139-144, (2015) (SCOPUS Indexed)

Conferences /workshops /Courses Attended

1. *7th International Symposium on Advances in Computational Heat Transfer (***CHT-17***)*, organized by University of Naples, Fedrico II, Napoli, Italy during May-June, 2017.
2. *3rd International Conference on Applications of Fluid Dynamics (***ICAFD-2016***)*, organized by the Indian Institute of Technology (ISM) Dhanbad in association with University of Botswana, Botswana during December 19-21, 2016.
3. *Short Term Course on Science Academys Refresher Course on Differential Equations and their Applications in Science and Engineering (***DEASE-2016***)*, Organized by Department of Applied Mathematics. Indian Institute of Technology (ISM) Dhanbad during July, 04-16, 2016.
4. *International Conference on Recent Trends in Mathematics (***ICRTM-2015***), organized by Department of Mathematics. University of Allahabad, Allahabad during July, 10-12, 2015.*
5. *International Conference on Modelling and Simulation of Diffusive Processes and Applications (***ICMSDPA***)*, organized by Department of Mathematics, BHU during October 29 - 30, 2014.
6. *Summer Program in Mathematics (***SPIM-2011***)*, organized by HRI Allahabad during June 20 - July 09, 2011.

Computer Skills

- Computational Software: MATLAB, MATHEMATICA, MAPLE
- Other software skills: LATEX, MS Office

Delivered Lectures

- Delivered a series of lectures as resource person in TEQIP-III sponsored National workshop on **Recent Trends in Engineering Mathematics (RTEM-2019)**, from 27th September to 1st October, 2019 at Ramgarh Engineering College, Ramgarh
- Delivered a lecture as invited speaker in a National Webinar on Fluid Dynamics organized by Manipal University Jaipur on the topic **Fluid Dynamics and its Role in Modern Engineering Challenges: A Mathematical Analysis**, on June 23, 2020
- Delivered a lecture as invited speaker in a National Webinar on the topic **Challenges and Opportunities on Mathematical Teaching and Student Learning During COVID-19**, organized by KNIPSS Sulatnapur, U.P on June 25, 2020"
- Delivered a lecture as invited speaker in a National Webinar on the topic **Mathematical Analysis of Air-Flow Cooling in Modern Data-Centers**, organized by S R Group of Institution Jhansi, U.P.
- Delivered a talk as invited speaker in the International Conference in Research Trends in Mathematics (ICRTM-2020) on the topic **Evolution of a droplet in a self re-wetting liquid with/without magnetic interaction**, organized by Vellor Institute of Technology Chennai

Reviewer of the Journals:

- Microsystems Technologies
- Waves in Random and Complex Media
- Scientific Reports
- Physica Scripta
- International Journal of Heat and Technology
- Journal of Applied and Computational Mechanics
- International Journal of Applied and Computational Mathematics
- Journal of Physics Communications
- Cogent Engineering

References

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