

Dr. Rajesh Kumar Mahato

Assistant Professor

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Additional Responsibilities

In-charge: Hydraulic and Fluid Mechanics Laboratory, Maulana Azad National Institute of Technology Bhopal

In-charge: Water Resources Engineering and Management Laboratory, Maulana Azad National Institute of Technology Bhopal

Research Interest

Analytical Hydrodynamics, Fluvial Instabilities, Meandering Rivers, etc.

Teaching Interest

Fluid Mechanics, Hydraulic Engineering, Computational Methods, Hydraulic Structures, Fluid Measurement Systems, Water Supply Engineering, etc.

Education

- **Ph.D. in Civil Engineering (2020–2023)**
Indian Institute of Technology Kharagpur
Specialization: Hydraulic and Water Resources Engineering
Thesis title: Streambed Instabilities in Turbulent Flows
Advisor: Prof. Subhasish Dey
- **M. Tech. in Civil Engineering (2018–2020)**
Indian Institute of Technology Kharagpur
Specialization: Hydraulic and Water Resources Engineering
Thesis title: Hydraulics of Seepage from Trapezoidal Channels
Advisor: Prof. Subhasish Dey
- **B. Tech. in Civil Engineering (2014–2018)**
Jalpaiguri Government Engineering College

List of Publications (Journals)

1. Mahato, R. K., S. Z. Ali, S. Dey, F. N. Cantero-Chinchilla, O. Castro-Orgaz, and L. Solari. 2025. "Formation of alternate river bars in submerged vegetated flows." *Proc. R. Soc. A* 481 (2309): 20240271.

2. Mahato, R. K. 2024. "Hydrodynamic instability of vegetated shear flows." *J. Hydrodyn.* 36 (5): 914–924.
3. Dey, S., R. K. Mahato, and S. Z. Ali. 2024. "Linear and weakly nonlinear instabilities of sand waves by a turbulent flow." *J. Hydraul. Eng.* 150 (3): 04024005.
4. Mahato, R. K., S. Dey, and S. Z. Ali. 2023. "Hydrodynamics of turbidity currents evolving over a plane bed." *Phys. Fluids* 35 (10): 105137.
5. Mahato, R. K., S. Z. Ali, and S. Dey. 2023. "Stability of longitudinal sediment waves formed by turbidity currents: linear and weakly nonlinear perspectives." *Proc. R. Soc. A* 479 (2277): 20230367.
6. Dey, S., R. K. Mahato, and S. Z. Ali. 2023. "Turbulent shear flow over a downstream-skewed wavy bed: an analytical model based on the RANS equations with Boussinesq approximation." *J. Hydraul. Eng.* 149 (9): 04023028.
7. Mahato, R. K., S. Dey, and S. Z. Ali. 2022. "Submarine channels formation driven by turbidity currents interacting with an erodible bed." *Proc. R. Soc. A* 478 (2263): 20220137.
8. Dey, S., R. K. Mahato, and S. Z. Ali. 2022. "Linear stability of sand waves sheared by a turbulent flow." *Environ. Fluid Mech.* 22 (2–3): 429–446.
9. Mahato, R. K., S. Dey, and S. Z. Ali. 2022. "Planform evolution of a sinuous channel triggered by curvature and autogenic width oscillations due to generic grain transport." *Phys. Fluids* 34 (4): 044110.
10. Mahato, R. K., S. Dey, and S. Z. Ali. 2021. "Instability of a meandering channel with variable width and curvature: role of sediment suspension." *Phys. Fluids* 33 (11): 111401.
11. Ali, S. Z., S. Dey, and R. K. Mahato. 2021. "Mega riverbed-patterns: linear and weakly nonlinear perspectives." *Proc. R. Soc. A* 477 (2252): 20210331.
12. Mahato, R. K., S. Z. Ali, and S. Dey. 2021 "Hydrodynamic instability of free river bars." *Phys. Fluids* 33 (4): 045105.
13. Mahato, R. K., and S. Dey. 2020. "Hydraulics of seepage from trapezoidal channels." *J. Hydraul. Eng.* 146 (12): 04020083.

List of Publications (Conferences)

1. Mahato, R. K. (2024). An analytical model for mean velocity profiles of submerged vegetated flows. Presented in International Water Conference for Sustainable Development Goals, March 22-23, 2024, MANIT Bhopal.
2. Mahato, R. K., Dey, S., Ali, S. Z. (2025). Hydrodynamic Characteristics of Submerged Turbulent Wall Jets. Oral Presentation in 41st IAHR World Congress (June 22–27, 2025), Singapore.

List of Research Projects

1. Hydrodynamics of Multi-layered Vegetated Flows [PI: R K Mahato, Seed Grant, MANIT Bhopal, Project Cost: 500000, Ongoing]

List of Consultancy Projects

1. Proof checking of hydraulic design of distribution network of Nasrullahganj, Tata Consultancy Engineering Ltd. [PI: M Kulshrestha, Co-PI: R K Mahato, Consultancy charge:

- 106200, Completed]
2. Vetting of design of distribution network of Berasia town, Municipal Council Berasia [PI: M Kulshrestha, Co-PI: R K Mahato, Consultancy charge: 118000, Completed]
 3. Proof checking of design and drawing of pipeline of water supply project Nikum (project under Jal Jeevan Mission), Aryan Construction Bilaspur [PI: M Kulshrestha, Co-PI: R K Mahato, Consultancy charge: 94400, Completed]
 4. Vetting of survey, design, construction, testing and commissioning of water supply scheme for PM MITRA Park at Bensola Dhar dist. plus 10 years operation and maintenance of complete scheme, Rean Watertech Pvt. Ltd. [PI: M Kulshrestha, Co-PI: R K Mahato, Consultancy charge: 277300, Completed]
 5. Third party audit of all air quality controlling and monitoring equipment at NTPC Gadarwara, NTPC [PI: M Kulshrestha, Co-PI: R K Mahato, Consultancy charge: 590000, Completed]
 6. Proof checking of design & drawing of water distribution project pump/motor at Kota Chapora, Distt. Bilaspur, Swami Construction [PI: M Kulshrestha, Co-PI: R K Mahato, Consultancy charge: 82600, Completed]
 7. Proof checking of design & drawing of water distribution network for Sirmour town, Rewa, Municipal Council Sirmour [PI: M Kulshrestha, Co-PI: R K Mahato, Consultancy charge: 82600, Completed]
 8. Proof checking of design & drawings of 100 KLD STP at Sambhalpur division, Pilo Shudh Pani Sewa Foundation [PI: M Kulshrestha, Co-PI: R K Mahato, consultancy charge: 29500, Completed]
 9. Proof checking of design & drawings of 100 KLD STP at Central Hospital, Bilaspur, Pilo Shudh Pani Sewa Foundation [PI: M Kulshrestha, Co-PI: R K Mahato, consultancy charge: 29500, Completed]
 10. Proof checking of design & drawings of distribution pipeline network of water supply scheme of Dhanpuri ULB under Shahdol district, Municipal Council Dhanpuri [PI: M Kulshrestha, Co-PI: R K Mahato, consultancy charge: 115050, Completed]
 11. Vetting of hydraulic design of pumps, raw water rising main, clear water rising main, and distribution network of Sitamau municipal council, Municipal Council Sitamau [PI: M Kulshrestha, Co-PI: R K Mahato, consultancy charge: 177000, Completed]
 12. Vetting of design of proposed and existing distribution network of Badkuhi municipal council, Badkuhi municipal council [PI: M Kulshrestha, Co-PI: R K Mahato, consultancy charge: 59000, Completed]
 13. Vetting of design of proposed and existing clear water rising main of Chhindwara Municipal Corporation, WTP's: 11.25 MLD, 15.75 MLD & 22 MLD [PI: M Kulshrestha, Co-PI: R K Mahato, consultancy charge: 160000, Completed]