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## **PUBLICATIONS**

### **International Journal Articles [Published] (12)**

1. **Kumar, B.,** Kadia, S., and Ahmad, Z. (2019). Evaluation of discharge equations of the Piano Key Weirs. Flow Measurement and Instrumentation. Elsevier. 68(2019). 101577. [doi:10.1016/J.FLOWMEASINST.2019.101577](https://doi.org/10.1016/J.FLOWMEASINST.2019.101577)
2. **Kumar, B.,** Kadia, S., and Ahmad, Z. (2019). Experimental study of flow field and movement of sediment over a ramp. Journal of Civil Engineering and Construction,8(2), 79–86. <https://doi.org/10.32732/jcecc.2019.8.2.79>
3. **Kumar, B.,** Kadia, S., and Ahmad, Z. (2021). Study on mechanics of sediment movement over Type-A Piano key weirs. Journal of Irrigation and Drainage Engineering. ASCE. 147(6). [https://doi.org/10.1061/\(ASCE\)IR.1943-4774.0001561](https://doi.org/10.1061/(ASCE)IR.1943-4774.0001561)
4. **Kumar, B.,** Kadia, S., and Ahmad, Z. (2021). Discharge characteristics of PK weirs with and without upstream siltation. International Journal of civil engineering. Springer. 19. 1043-1054. <https://doi.org/10.1007/s40999-021-00607-x>
5. **Kumar, B.** and Ahmad, Z. (2021). Scour Downstream of a Piano Key Weir with and without a Solid Apron. Journal of Irrigation and Drainage Engineering (ASCE).148(1).[10.1061/\(ASCE\)IR.1943-4774.0001647](https://doi.org/10.1061/(ASCE)IR.1943-4774.0001647)
6. **Kumar, B.,** Kadia, S., and Ahmad, Z. (2022). Sediment Movement over Triangular Weir with an Upstream Ramp Using High Speed Camera. Journal of Visualization (Springer).25, pp 1017-1033. <https://doi.org/10.1007/s12650-022-00831-0>
7. Kadia, S., Pummer, E., **Kumar, B.,** Ruther, N. and Ahmad, Z. (2023). An Empirical Equation for the Coefficient of Discharge of Free-Flowing Type- Piano Key Weirs. Journal of Irrigation and Drainage Engineering. (ASCE).149. <http://dx.doi.org/10.1061/JIJDH.IRENG-9886>
8. Patra, S., **Kumar, B.,** and Pandey, M. (2023). Experimental Study on the Turbulence Characteristics in a Vegetated Channel. Flow Measurement and Instrumentation Volume 94,102464, ISSN0955-5986 (Elsevier). <https://doi.org/10.1016/j.flowmeasinst.2023.102464>
9. **Kumar, B.,** Patra, S., and Pandey, M. (2023). Experimental Investigation on Flow Configuration in Flexible and Rigid Vegetated Streams. Water Resources Management: An International Journal, Published for the European Water Resources Association (EWRA), Springer; European Water Resources Association (EWRA), vol. 37(15), pages 6005-6019, December. [DOI: 10.1007/s11269-023-03640-8](https://doi.org/10.1007/s11269-023-03640-8)
10. **Kumar, B.,** Pandey, M., and Ahmad, Z. (2024). Flow Field and Sediment Passing Capacity of Type-A Piano Key Weirs, International Journal of Sediment Research (Elsevier). <https://doi.org/10.1016/j.ijsrc.2024.04.005>
11. **Kumar, B.,** Ahmad, R., Pandey, M., and Gupta, A.K. (2024) Numerical and statistical analysis of auxiliary geometrical parameter effects on piano key weir discharge capacity AIMS Environmental Science 2024 <https://doi.org/10.3934/environsci.2024036>.
12. Sinha, P.K., **Kumar, B.,** and Ahmad, Z. (2025). Experimental Study on Piano Key Weirs of Ogee Outlet Key for Enhancement in Discharge Capacity. Journal of Irrigation and Drainage Engineering. (ASCE). [\[Accepted\]](#).

### **Patent (01)**

1. A Sediment Flusher, Pandey, M., **Kumar, B.,** Afzal, S., and Dixit, P.K. (2022). Design No.: 371917-001; Date of Filing: 02-10-2022; Awarding Organization-Intellectual Property India (Government of India). Date of Issue: 20/02/2024.

### **Book Chapters (04)**

1. **Kumar, B.** and Singh, V. (2021). Study of scour near pier of Gandhi setu in Ganga River, Proceedings of Springer Nature. Chapter-7, River Hydraulics, ISBN 978-3-030-81767-1.doi 10.1007/978-3-030-81768-8.
2. Kadia, S., **Kumar, B.**, and Ahmad, Z. (2020). Discharge Characteristics of Triangular Weir with Upstream Ramp and its CFD Modeling using Ansys CFX Module Published in Springer series: "Geo Planet: Earth and Planetary Sciences". Recent trends in Environmental hydraulics, chapter -7, pp-77-90. ISBN 978-3-030-37105-0.
3. **Kumar, B.**, Patra, S., Pandey, M., and Dikshit, P., K. (2022). A review on hydrodynamics and of vegetated streams. Proceedings of Springer Nature. River Dynamics and Flood Hazards: Studies on Risk and Mitigation. ISBN 978-981-19-7099-3.
4. **Kumar, B.**, Hasan, E., Pandey, M. (2022). A review on parametric studies of piano key weirs. Proceedings of Springer Nature. River Dynamics and Flood Hazards: Studies on Risk and Mitigation. ISBN 978-981-19-7099-3.

### **Conferences [Presented] (15)**

1. **Kumar, B.** and Singh, V. (2017).Study of scour near pier of Gandhi setu in Ganga River, Proceedings of Third world large River International Conference (IAHR); 21-23 April; **New Delhi, India**.
2. **Kumar, B.** and Singh, V. (2018).Study of scour depth near pier of Gandhi setu in Ganga River, Proceedings of HYDRO 2018 International Conference; 17-21 December; **Patna, India**.
3. **Kumar, B.**, Kadia, S. and Ahmad, Z. (2018).Experimental study on flow field and movement of sediment over a ramp, **Hong Kong**, CREE- 2018, December 29-30
4. Kadia, S., **Kumar, B.**, and Ahmad, Z. (2019). Discharge Characteristics of Triangular Weir with Upstream Ramp and its CFD Modeling using Ansys CFX Module. In Proceedings of the XXXVIII International School of Hydraulics, 21-24 May 2019, **Lack, Poland**, which is published in Springer series: "Geo Planet: Earth and Planetary Sciences".
5. Kadia, S., **Kumar, B.**, and Ahmad, Z. (2019). Piano Key Weir as a Dam Safety Technique and its CFD Modeling in Ansys CFX Module. In Compendium of Technical Papers for the International Dam Safety Conference - 2019, **Bhubaneswar, India** (pp. 91–99). New Delhi: Central Water Commission.
6. **Kumar, B.**, Kadia, S. and Ahmad, Z. (2019),Experimental study on flow field in the vicinity of PK weirs, **San Francisco (California)** , AGU- FALL MEETING 2019, December 07- 12.
7. **Kumar, B.** and Ahmad, Z. (2020).Experimental study on the scour downstream of PK weirs. ISHS 2020, **CHILE**, University of Queensland, Brisbane.
8. Kadia, S., **Kumar, B.**, Pummer, E., Ruther N., and Ahmad, Z. (2021). Experimental and CFD Simulation Studies on the Flow Approaching a Type- A PKW. **Vienna, Austria**, EGU 2021, April 25-30.
9. **Kumar, B.** and Ahmad, Z. (2022). Experimental study on the three dimensional velocity of PK weirs. Proceedings of the 9th IAHR International Symposium on Hydraulic Structures – 9th ISHS, 24-27 October 2022, **IIT Roorkee, Roorkee, India**. Palermo, Ahmad, Crookston, and Erpicum Editors. Utah State University, Logan, Utah, USA, 10 pages (DOI: 10.26077/f13f-9ef3) (ISBN 978-1-958416-07-5).
10. Sinha, P., K., **Kumar, B.** and Ahmad, Z. (2022). Hydraulic performance of piano key with curvilinear key. Proceedings of the 9th IAHR International Symposium on Hydraulic Structures – 9th ISHS, 24-27 October 2022, **IIT Roorkee, Roorkee, India**. Palermo, Ahmad, Crookston and Erpicum Editors. Utah State University, Logan, Utah, USA, 10 pages (DOI: 10.26077/f13f-9ef3) (ISBN 978-1-958416-07-5).
11. **Kumar, B.** and Jothiprakash, V. (2024). Utilization of ANN Model for the Evaluation of Discharge Coefficient of a Piano Key Weir. 10th IAHR International Symposium on Hydraulic Structures – 10th ISHS, 17-19 June 2024, **Zurich, Switzerland**.

12. Gaur, R., **Kumar, B.**, and Vaishya, R.C. (2025). Development of an Integrated Water Resources Management tool for Sustainable Water Management. AwaRe, [MANIT Bhopal, India](#).
13. Singh, K., Kumar, B. and Saxena, K. (2025). A Review on Integrated Water Resources Management for Sustainable Development. WET WAR 2025 INTERNATIONAL, NIT Patna, 29-31 December 2025, [Patna](#).
14. Shukla, S., Pandey, H.K., Kumar, B. (2025). Watershed Management of Duddhi Watershed, Son Bhadra District of Uttar Pradesh. WET WAR 2025 INTERNATIONAL, NIT Patna, 29-31 December 2025, [Patna](#).
15. Raj, M., and Kumar, B. (2026, Accepted). Experimental Analysis of Vegetation Effects on Piano Key Weir Performance. River Flow 2026. 13th International Conference on Fluvial Hydraulics, [Thessaloniki, Greece](#), June 30-July 4, 2026.

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