

Dr. Hamid Rahman



Present Address: Assistant Professor, Department of Mathematics and Statistics, Bacha Khan University, Charsadda, Pakistan

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Research Interests

- Numerical Simulation of Flow Past Bluff Bodies
- Computational Fluid Dynamics
- Fluid Structure Interactions
- Numerical Analysis

Academic Background

Certificate/degree	College /University	Board/University	% / GPA	Year of degree obtained
S.S.C science Group	Al Badar Model School Shewa Adda (Swabi)	BISE Peshawar, Pakistan	81	2001
F.Sc Pre-Engineering	Islamia College Peshawar	BISE Peshawar, Pakistan	73	2003
Bachelor of science	Islamia College Peshawar	University of Peshawar, Pakistan	63	2006
M.Sc Mathematics	Govt.Postgraduate College Mardan	University of Peshawar, Pakiatan	75	2008
MS Mathematics	Department of Mathematics	COMSATS Institute of Information Technology Islamabad, Pakistan	3.37/4.00	2012
PhD (Mathematics)	Department of Mathematics	COMSATS Institute of Information Technology Islamabad, Pakistan	Completed/ Approved	2016

Research Work Details

- Wake Patterns of Flow Past Three Side-By-Side Square Cylinders for Equal and Unequal Spacing Ratios (MS thesis).
- A Numerical Study of Flow Past Bluff Bodies in Tandem and Side-By-Side Arrangements Using the Lattice Boltzmann Methods (PhD thesis).

Teaching Experience

- Working as Assistant Professor of Mathematics at Department of Mathematics & Statistics, Bacha Khan University, Charsadda w.e.f 7th December, 2016 till date.
- Worked as a lecturer in Mathematics at GPGC Swabi w.e.f 1st February, 2010 till 4th October 2010
- Worked as a lecturer in Mathematics at Swabi Polytechnic Institute Swabi w.e.f 1st October 2008 till 31st January, 2010.

Publications

1. **H. Rahman**, W. S. Abbasi, S. U. Islam, R. Khan and M. U. Khan, "Flow features of three side-by-side rectangular cylinders under the effect of aspect ratios and Reynolds numbers" *International Journal of Modern Physics C*, (2020), <https://doi.org/10.1142/S0129183121500340>
2. **H. Rahman**, S. U. Islam, W. S. Abbasi, S. Mukhtar and T. Alam, "Flow Structure Mechanism around three Rectangular Bodies using the Lattice Boltzmann Method" *Ocean Engineering*, 216 (2020), 108101(1-11).
3. A. Ahmed, R. Manzoor, S. U. Islam and **H. Rahman**, "Numerical investigation for flow past over a square rod through passive control method at various Reynolds Numbers" *Canadian Journal of Physics*, 98 (2020) 425-432.
4. **H. Rahman**, S. U. Islam, W. S. Abbasi and G. Nazeer, "A numerical study for flow around three square cylinders in triangular arrangement" *Iranian Journal of Science and Technology, Transaction of Mechanical Engineering* 44 (2020) 229-246.
5. W. S. Abbasi, S. U. Islam, and **H. Rahman**, "Proximity effects on characteristics of flow around three inline square cylinders" *Mathematical Problems in Engineering* 2019 (1752803) (2019) 1-14.
6. **H. Rahman**, S. U. Islam, W. S. Abbasi, S. Mukhtar and C. Y. Zhou, "Effect of aspect ratios on flow past a row of cylinders for various gap spacings" *European Journal of Mechanics/B Fluids* 72 (2018) 374-390.
7. S. U. Islam, **H. Rahman** and C. Y. Zhou, "A two-dimensional lattice Boltzmann study of flow past five side-by-side rectangular cylinders" *Journal of the Brazilian Society of Mechanical Sciences and Engineering* 40 (2018) 321.
8. W. S. Abbasi, S. U. Islam, L. Faiz and **H. Rahman**, "Numerical investigation of transitions in flow states and variation in aerodynamic forces for flow around square cylinders arranged inline" *Chinese Journal of Aeronautics* 31(11) (2018) 2111-2123.
9. W. S. Abbasi, S. U. Islam, **H. Rahman** and R. Manzoor, "Numerical investigation of fluid-solid interaction for flow around three square cylinders" *AIP ADVANCES* 8 (2018) 025221.
10. S. U. Islam, **H. Rahman** and C. Y. Zhou, "Effect of gap spacings on flow past row of rectangular cylinders with aspect ratio 1.5" *Ocean Engineering* 119 (2016) 1-15.
11. S. U. Islam, **H. Rahman**, C. Y. Zhou and S. C. Saha, "Comparison of wake structures and force measurements behind three side-by-side cylinders" *Journal of the Brazilian Society of Mechanical Sciences and Engineering* 38 (2016) 843-858.
12. S. U. Islam, **H. Rahman**, W.S. Abbasi, S.C. Saha and T. Shahina, "Numerical investigation of flow past row of rectangular rods" *Alexandria Engineering Journal*, 55 (2016) 2351-2365
13. S. U. Islam, W. S. Abbasi, **H. Rahman** and R. Naheed "Numerical investigation of wake modes of flow past three tandem cylinders using the multi-relaxation-time lattice Boltzmann method for different gap spacings" *Journal of the Brazilian Society of Mechanical Sciences and Engineering* 38 (2016) 799-812.
14. **H. Rahman**, S. U. Islam, C. Y. Zhou, T. Kiyani and S. C. Saha, "On the effect of Reynolds numbers for flow past three side-by-side square cylinders for unequal gap spacings" *KSCCE Journal of Civil Engineering* 19(1) (2015) 233-247.

15. S. U. Islam, **H. Rahman**, W. S. Abbasi and T. Shahina “Lattice Boltzmann study of wake structure and force statistics for various gap spacings between a square cylinder with a detached flat plate” *Arabian Journal of Science and Engineering* 40 (2015) 2169-2182.
16. S. U. Islam, **H. Rahman**, W. S. Abbasi, U. Noreen and A. Khan “Suppression of fluid force on flow past a square cylinder with a detached flat plate at low Reynolds number for various spacing ratios” *Journal of Mechanical Science and Technology* 28 (2014) 4969-4978.
17. S. U. Islam, **H. Rahman** and W. S. Abbasi “Grid independence study of flow past a square cylinder using the Multi-relaxation-time lattice Boltzmann method” *International Journal of Mathematical, Computational, Physical and Quantum Engineering*, 8 (2014) 980-990.
18. S. U. Islam, W. S. Abbasi and **H. Rahman** “Force statistics and wake structure mechanism of flow around a square cylinder at low Reynolds numbers” *International Journal of Mechanical, Aerospace, Industrial and Mechatronics Engineering*, 8 (2014) 1375-1381.
19. S. U. Islam, **H. Rahman**, W. S. Abbasi and N. Rathore “Numerical simulation of flow past an infinite row of equispaced square cylinders using the Multi-relaxation time lattice Boltzmann Method” *International Journal of Mechanical, Aerospace, Industrial and Mechatronics Engineering*, 8(8) (2014) 1488-1494.
20. **H. Rahman**, S. U. Islam and C. Y. Zhou “Numerical simulation of flow behind three side-by-side square cylinders for various unequal gap spacing” *Journal of Mechanical Science and Technology*, (2015) (Accepted).

Supervision of M. Phil Theses with Scholars Name and Title

1. **Scholar Name:** Mr. Tauseef Alam (2018)
Title: Numerical Investigation of Flow Past Three Side-By-Side Rectangular Bodies Using Lattice Boltzmann Method.
2. **Scholar Name:** Mr. Fazle Amin (2018)
Title: Wake Patterns Analysis and Fluid Forces for Flow around Three Rectangular Cylinders at Low Reynolds Numbers.
3. **Scholar Name:** Mr. Israr Ali (2019)
Title: A Numerical Study for Flow Structure Mechanism around a Row of Cylinders.
4. **Scholar Name:** Mr. Imran Khan (2020)
Title: Suppression of Vortex-Shedding and Reduction of Fluid Forces for Two Side-by-Side Square Cylinders with a Splitter.

Awards and Projects

- A project titled “Numerical Simulations of Flow Past Three Rectangular Bodies Arranged Side-by-Side” approved by HEC under START-UP RESEARCH GRANT PROGRAM as a Principal Investigator (completed).
- HEC scholarship award for PhD studies under the program Indigenous PhD Fellowships 5000 Scholars Phase-II.
- Research productivity award 2014 by COMSATS Institute of Information Technology, Islamabad.

Workshops and Conferences

- Symposium on Computational Complexities, Innovations and Solutions, May 11-12, 2015, CIIT Abbottabad.
- Workshop on Recent Advances in Computational Fluid Dynamics, May 28-29, 2015, CIIT Islamabad.
- Workshop on open source software “DUNE-PDELAB”, October 5-9, 2015, CIIT Islamabad
- Conference on Applied and Computational Mathematics, March 29-30, 2016, CIIT Islamabad
- Workshop on Self Assessment Report Writing, March 15-16, 2017, Bacha Khan University Charsadda

Reviewer

- Ocean Engineering (ISI listed)
- International Journal of Modern Physics C (ISI listed)
- Reviewer of the Journal of Mechanical Science and Technology (ISI listed).
- Reviewer of PLOS ONE (ISI listed)

Technical Skills

- **Programming Skills:**
 - Fortron.
 - MatLab.
- **Other Tools Used:**
 - Latex.
 - Microsoft Office.
 - Tecplot

Communicate In:

- English Fluent.
- Urdu Fluent.
- Pashto Native.

References:

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