



Mohamad Hamed Hekmat

Assistant Professor

College: Mechanical Engineering

Education

Degree	Graduated in	Major	University
BSc	2004	Mecjanical Engineering-Fluid Mechanics	Yazd University
MSc	2008	Aerospace Engineering-Aerodynamics	K. N. Toosi University of Technology
Ph.D	2014	Aerospace Engineering-Propulsion	K. N. Toosi University of Technology

Employment Information

Faculty/Department	Position/Rank	Employment Type	Cooperation Type	Grade
Tafresh University		On Contract	Full Time	

Awards

- First master student in Aerodynamic Group-Department of Aerospace Engineering with GPA 18.59
- The best master student of K. N. Toosi University of Technology
- Selected the master's thesis as the national premier thesis in aerospace field
- First Ph.D. student in Aerodynamic Group-Department of Aerospace Engineering with GPA 19.27
- The best Ph. D. student of K. N. Toosi University of Technology

Subjects Taught

- Numerical Optimization
- Advanced Thermodynamics
- Advanced Fluid Mechanics
- Flow Measurement
- Subsonic/Supersonic Aerodynamics
- Unmanned Micro-Air Vehicle
- Lattice Boltzmann Method

Executions And Scientific Activities

- Member of Science Committee in the Conference of Iranian Aerospace Society (2007)
- Member of Science Committee in the Conference of Iranian Aerospace Society (2016)

Course Topics

- Heat Transfer
- Fluid Mechanics
- Gas Dynamics
- CFD

Conferences

- Member of Science Committee in the Conference of Iranian Aerospace Society (2007)
- Member of Science Committee in the Conference of Iranian Aerospace Society (2016)

Papers in Conferences

1. H. Shafiee, M. H. Hekmat. Heat transfer characteristics of turbulent nanofluid flow in skewed corrugated channel. 3rd Annual International Conference of Iranian Society of Mechanical Engineering, Tehran, 2022.
2. Z. Soori, M. H. Hekmat, M. A. Aghasi. Control of non-newtonian fluid flow on a circular cylinder using multiple control. 19th Fluid Dynamics Conference. شماره صفحات ۱-۱۰, Tehran, 2021.
3. M. Moosa, M. H. Hekmat, A. Rezaei, H. Heidari. Three-dimensional study of the effect of geometric parameters and flow on standard orifice efficiency and downstream turbulence characteristics. 18th Fluid Dynamics Conference. Mashhad, Iran, 2019.
4. M. H. Hekmat, A. Hasiri. Effect of the vortex generators on heat transfer and pressure drop of water-

- based-nanofluids. 27th Annual International Conference of Iranian Society of Mechanical Engineering and 7th Conference of Thermal Power Plants. Tehran, Iran. 2019.
5. M. H. Hekmat, S. Saharkhiz. Parametric study of forced convection in a micro-channel heat sink with elliptical pin fins. 27th Annual International Conference of Iranian Society of Mechanical Engineering and 7th Conference of Thermal Power Plants. Tehran, Iran. 2019.
 6. M. H. Hekmat, M. Mirzaei, Aerodynamic design using CFD and adjoint equations method, 8th Iranian Aerospace Society Conference, Isfahan, Iran, 2009.
 7. M. H. Hekmat, S. Karbalaeeian, E. Izadpanah, Non-iterative estimation of thermal conductivity of periodically contacting surfaces using artificial neural network models, 17th Annual (International) Conference on Mechanical Engineering, Tehran, Iran, 2009.
 8. M. H. Hekmat, M. Mirzaei, E. Izadpanah, E. Rooki, „The implementation of adjoint equations approach for the inverse pressure design problem, International Conference on Fascinating Advancement in Mechanical Engineering, Sivakasi, India, 2008.
 9. E. Izadpanah, S. Talebi, M. Mirzaei, M. H. Hekmat, The effect of thermal mach on the temperature distribution around a moving heat source, 12th Asian Congress of Fluid Mechanics, Daejeon, Korea, 2008.
 10. E. Izadpanah, S. Talebi, M. Mirzaei, M. H. Hekmat, Numerical investigation of wave behaviour of thermal distribution using non fourier conduction, 12th Asian Congress of Fluid Mechanics, Daejeon, Korea, 2008.
 11. M. R. Rajabi, M. H. Hekmat, M. Mirzaei. Aerodynamic optimization of the satellite fearing geometry in viscous flow using the response surface method on unstructured grids at several points along the route. 11th Fluid Dynamics Conference. Tehran, Iran. 2008.
 12. M. R. Rajabi, J. Roshanian, A. Hasani Goodarzi, M. Mirzaei, M. H. Hekmat, Multi-point aerodynamic shape optimization using a gradient-based approach, First International Conference on Modeling, Simulation and Applied Optimization, Sharjah, U.A.E, 2005.

Papers in Journals

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1. E. Izadpanah, M. Yazdani, M. H. Hekmat, Y. Amini, Thermal performance of oscillating blade with various geometries in a straight channel, Journal of Applied and Computational Mechanics, Vol. 2, No. 7, pp. xx-xx, 2022.
 2. M. A. Aghasi, M. H. Hekmat, A novel design of split and recombination multilayer micromixers with excellent hydraulic and mixing performance based on the baker's transformation, Chemical Engineering and Processing - Process Intensification, Chemical Engineering and Processing - Process Intensification, 2022.
 3. Mohamad Hamed Hekmat, Mohamad Hosein Khaksar Haghani, Ehsan Izadpanah, Hosein Sadeghi, The influence of energy storage container geometry on the melting and solidification of PCM, International Communications in Heat and Mass Transfer, 2022.
 4. M. H. Hekmat, S. Saharkhiz, Effect of Nanofluid Flows on Heat Transfer Intensification of Corrugated Channels with an Oscillating Blade, Chemical Engineering and Processing: Process Intensification, 2022.
 5. A. Ashouri, E. Izadpanah, M. H. Hekmat, Y. Amini, Numerical investigation on two-degree-of-freedom vortex-induced vibration of a circular cylinder in power-law fluids, Journal of Non-Newtonian Fluid Mechanics, 2021.
 6. M. H. Hekmat, S. Saharkhiz, M. Babaie, Heat transfer characteristics of laminar and turbulent wavy channel flow in the presence of a stationary or rotating blade, Journal of the Brazilian Society of Mechanical Sciences and Engineering, 2021.
 7. M. H. Ahmadi, M. H. Hekmat, Numerical and experimental investigation of air flow behavior and H₂S gas emission through an inclined traversed tunnel, Journal of the Brazilian Society of Mechanical Sciences and Engineering, 2021.
 8. M. H. Hekmat, M. Rahmanpour, M. Mahmoudi, S. Saharkhiz, A genetic algorithm-based approach for

- numerical solution of droplet status after Coulomb fission using the energy conservation method, *Journal of Computational Applied Mechanics*, 2020.
9. M. H. Hekmat, G. A. Biukpour, Numerical study of the oil whirl phenomenon in a hydrodynamic journal bearing, *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, No. 41, pp. 218, 2019.
 10. M. H. Hekmat, M. B. Rabiee, K. K. Ziarati, Numerical investigation of the mixed convection of a magnetic nanofluid in an Annulus between Two Vertical Concentric Cylinders under the influence of a non-uniform external magnetic field, *Journal of Thermal Analysis and Calorimetry*, pp. 1-15, 2019.
 11. M. H. Hekmat, K. K. Ziarati, Effects of nanoparticles volume fraction and magnetic field gradient on the mixed convection of a ferrofluid in the annulus between vertical concentric cylinders, *Applied Thermal Engineering*, No. 152, pp. 844-857, 2019.
 12. M. Moosa, M. H. Hekmat, Numerical investigation of turbulence characteristics and upstream disturbance of flow through standard and multi-hole orifice flowmeters, *Flow Measurement and Instrumentation*, No. 65, pp. 203-218, 2019.
 13. M. H. Hekmat, S. Saharkhiz, E. Izadpanah, Investigation on the thermal mixing enhancement in a T-junction pipe, *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, No. 41, pp. 276, 2019.
 14. M. H. Hekmat, A. Ansari, M. Rahmanpour, S. Saharkhiz, Numerical Simulation and Parametric Study of the Convection Heat Transfer in a Micro-Channel Heat Sink with the Elliptical Pin Fins, *Mechanical Engineering Journal of Tabriz University*, 2019.
 15. E. Izadpanah, M. H. Hekmat, H. Azimi, H. Hoseini, M. Babaie Rabiee, Numerical simulation of mixing process in T-shaped and DT-shaped micromixers, *Chemical Engineering Communications*, Vol. 205, No. 3, pp. 1-9, 2018.
 16. H. Sadeghi, E. Izadpanah, M. Babaie Rabiee, M. H. Hekmat, Effect of cylinder geometry on the heat transfer enhancement of power-law fluid flow inside a channel, *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, Vol. 39, No. 5, pp. 1695-1707, 2017.
 17. M. H. Hekmat, M. Mirzaei, A comparison of the continuous and discrete adjoint approach extended based on the standard lattice Boltzmann method in flow field inverse optimization problems, *Acta Mechanica*, Vol. 227, No. 4, pp. 1025-1050, 2016.
 18. M. H. Hekmat, M. Mirzaei, Extraction of macroscopic and microscopic adjoint concepts using a lattice Boltzmann method and discrete adjoint approach, *Physical Review E*, Vol. 91, No. 1, pp. 013303, 2015.
 19. M. H. Hekmat, M. Mirzaei, Continuous and discrete adjoint approach based on lattice Boltzmann method in aerodynamic optimization part I: mathematical derivation of adjoint lattice Boltzmann equations, *Advances in Applied Mathematics and Mechanics*, Vol. 6, No. 5, pp. 570-589, 2014.
 20. M. H. Hekmat, M. Mirzaei, Development of discrete adjoint approach based on the lattice Boltzmann method, *Advances in Mechanical Engineering*, No. 2014, pp. 1-16, 2014.
 21. E. Izadpanah, S. Talebi, M. H. Hekmat, Numerical simulation of non-Fourier effects in combined heat transfer, *Proceedings of Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, Vol. 225, No. 2, pp. 429-436, 2011.
 22. E. Sharifi Tashnizi, A. Akhavan Taheri, M. H. Hekmat, Investigation of the adjoint method in aerodynamic optimization using various shape parameterization techniques, *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, Vol. 32, No. 2, pp. 176-186, 2010.
 23. M. H. Hekmat, M. Mirzaei, E. Izadpanah, Numerical investigation of adjoint method in aerodynamic optimization, *Mechanical and Aerospace Engineering Journal (Fluids & Aerodynamics)*, Vol. 5, No. 1, pp. 75-86, 2009.
 24. M. H. Hekmat, M. Mirzaei, E. Izadpanah, Constrained and non-constrained aerodynamic optimization using the adjoint equations approach, *Journal of Mechanical Science and Technology*, Vol. 23, No. 9, pp. 2479-2491, 2009.
 25. E. Izadpanah, S. Talebi, M. H. Hekmat, A. Akhavan Taheri Borojeni, Numerical analysis on

temperature distribution around a moving heat source using non-Fourier heat conduction,International Journal of Theoretical and Applied Mechanics,Vol. 4,No. 9,pp. 197-204,2009.

26. E. Izadpanah, S. Talebi, M. H. Hekmat, A. Akhavan Taheri Borojeni,Heat transfer in semitransparent medium caused by laser pulse,International Journal of Industrial Engineering & Production Research,No. 7,pp. 151-159,2008.