Tushar Chourushi
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EDUCATION

Qualification	Specialization	University/Institute	Year	CPI/%
Post Doc.	*Mechanical & Aerospace Engineering*	**Gyeongsang National University**, Jinju, South Korea	2022	NA
Ph.D.	*Mechanical & Aerospace Engineering*	**Gyeongsang National University**, Jinju, South Korea	2017-2022	4.3/4.5
Research Scholar	*Mechanical Engineering*	**Indian Institute of Technology (IIT)**, Indore, India	2012-2016	9.13/10.0
MTech.	*Computational Fluid Dynamics (CFD)*	**University of Petroleum & Energy Studies**, Dehradun, India (in accredition with **I^{2}IT** pune)	2007-2009	3.65/4.0
BE.	*Mechanical Engineering*	**Hemchandracharya North Gujarat University**, Patan, India	2003-2007	70%(*Distinction*)
HSc.	*Science*	**Kendriya Vidyalaya** (No. 1), Ahmedabad	2003	72%

SKILLS

- **Languages** (Fortran, C), **Script** (Tcl/Tk), **Tools** (LaTeX, Tecplot, Gnuplot), **CFD softwares** (OpenFOAM, ICEM-CFD, CFX, Nx-Ideas, Gambit, Fluent).

EXPERIENCE

Type: *Research*

- **Gyeongsang National University, Jinju**
  (Post-Doc. & Ph.D. in Mechanical & Aerospace Engineering, 2017 - 2022)
  - Worked on applications of non-equilibrium rarefied gas flows and non-Newtonian viscoelastic fluids using the modal discontinuous Galerkin and finite volume methods, respectively.
  - Published some of these works in *SCI peer-reviewed* journals.

- **Indian Institute of Technology, Indore**
  (Research Scholar in Mechanical Engineering, 2012 - 2016)
  - Worked on the development of accurate, stable, and convergent finite volume numerical schemes for incompressible Newtonian and non-Newtonian viscoelastic fluids.
  - Published some of these works in *SCI peer-reviewed* journals.

- **Indian Institute of Technology, Gandhinagar**
  (Faculty summer fellowship in Mechanical Engineering, 2011 - 2011)
  - Participated in the Computational Engineering Open Source (CEOS) initiative (such as, OpenFOAM).

Type: *Teaching*

- **Symbiosis Institute of Technology, Pune**
  (Assistant Professor in Mechanical Engineering, 2011 - 2012)
  - Objective: Teaching and research duties for BE and MTech.
  - Subjects taught: Fluid Power Engineering, Elements of Mechanical Engineering, Heat and Mass transfer, Computational Fluid Dynamics.

- **Gandhinagar Institute of Technology, Ahmedabad**
  (Assistant Professor in Mechanical Engineering, 2011 - 2011)

- Objective: Teaching and research duties for BE and MTech. .
- Subjects taught: Non-conventional Energy Sources, Fluid Mechanics, Fluid Power Engineering, Elements of Mechanical Engineering, Gas Dynamics.

Type: *Industry*

- **Mather & Platt, Pune** (in Advanced Reseach & Technology Center (ARTEC) of WILO-SE, Germany)
  (Senior Executive in Research & Development, 2009 - 2011)
  - Worked on the design and development of energy efficient centrifugal and axial flow pumps, using ANSYS software.

THESIS

Type: *PhD.*

- **Title: Computational simulation of Boltzmann-based hydrodynamic models for rarefied and microscale gases and viscoelastic fluids in highly non-equilibrium state** (Ph.D. thesis)
  (Advisor: Prof. Dr. R. S. Myong (Director, Research Center for Aircraft Core Technology, GNU, S. Korea))
  - *Objective:* Numerical simulation of rarefied, microscale gas flows and viscoelastic fluid systems using the second- order constitutive relations.

Type: *MTech.*

- **Title: CFD flow analysis of an axial-flow pump using ANSYS CFX** (MTech. thesis)
  (Advisor: Dr. B. C. Bhaoyal (Former Vice President of Mather & Platt, India))
  - **Employer:** Mather & Platt, Pune, India (subsidiary of WILO-SE, Germany)
  - *Objective:* Improvement of hydraulic efficiency of an Axial flow pump by an optimized design of propeller blades using the ANSYS.

PEER REVIEWED PUBLICATIONS

- **T. Chourushi, A. Rahimi, S. Singh, O. Ejtehadi, T. K. Mankodi, R.S. Myong**, Thermal and flow characteristics of nonequilibrium monatomic, diatomic, and polyatomic gases in cylindrical Couette flow based on second-order non-Navier–Fourier constitutive model, *International Journal of Heat and Mass Transfer*, vol. 187, 122580, 2022.
  Elsevier Publishing, I.F. 5.584

- **S. Singh, A. Karchani, T. Chourushi, R.S. Myong**, A three-dimensional modal discontinuous Galerkin method for the second- order Boltzmann-Curtiss-based constitutive model of rarefied and microscale gas flows, *Journal of Computational Physics*, vol. 457, 111052, 2022.
  Elsevier Publishing, I.F. 5.439

- **T. Chourushi, S. Singh, A.S. Vishnu, R.S. Myong**, Computational study of hypersonic rarefied gas flow over re-entry vehicles using the second-order Boltzmann-Curtiss constitutive model, *International Journal of Computational Fluid Dynamics*, vol. 35:8, pp. 566–593, 2021.
  Taylor & Francis Publishing, I.F. 1.593, lowest acceptance rate 11% CFD journal

- **A.S. Vishnu, T. Chourushi, B. Sengupta, R.S. Myong**, Effects of bulk viscosity, vibrational energy, and rarefaction and vorticity fields around simple bodies at hypersonic speeds, *AIAA SciTech Forum*, Session: High-Speed Flows I, San Diego, Jan. 2022-1065.
  AIAA SciTech, I.F. 1.13

- **T. Chourushi, A. Rahimi, S. Singh, R.S. Myong**, Computational simulations of near-continuum gas flow using Navier-Stokes-Fourier equations with slip and jump conditions based on the modal discontinuous Galerkin method, *Advances in Aerodynamics*, vol. 2:8, pp. 1-37, 2020.
  Springer Publishing

- **T. Chourushi**, Proposition of modified convection boundedness criterion and its evaluation for the development of bounded schemes, *Applied Mathematics and Computation*, vol. 346, pp. 710-739, 2019.
  Elsevier Publishing, I.F. 4.091

- **T. Chourushi, S. Singh, R.S. Myong**, Computational study of rarefied flow inside a lid driven cavity using a mixed modal discontinuous Galerkin method, *Journal of Computational Fluids Engineering*, vol. 23(3), pp. 62-71, 2018.
KSCFE Publishing

- **T. Chourushi**, A high resolution equi-gradient scheme for convective flows, *Applied Mathematics and Computation*, vol. 338, pp. 123-140, 2018.
Elsevier Publishing, I.F. 4.091

- **T. Chourushi**, Computationally inexpensive and revised normalized weighting factor method for segregated solvers, *International Journal of Computer Mathematics*, pp. 1622-1653, 2017.
Taylor & Francis Publishing, I.F. 1.931

- **T. Chourushi**, Effect of fluid elasticity on the numerical stability of high-resolution schemes for high shearing contraction flows using OpenFOAM, *Theoretical & Applied Mechanics Letters*, vol. 7, pp. 41–51, 2017.
Elsevier Publishing, I.F. 1.567

MANUSCRIPTS UNDER PRODUCTION/REVIEW/PREPARATION

- **T. Chourushi, S. Singh, A.S. Vishnu, R.S. Myong**, Numerical simulations of rarefied gas flow over an aero-spiked hypersonic blunt body using the second-order Boltzmann-Curtiss constitutive model, *Under preparation*.
AIP Publishing

- **T. K. Mankodi, O. Ejtehadi, T. Chourushi, A. Rahimi, R.S. Myong**, nccrFOAM: Generalized Hydrodynamics based Nonlinear Coupled Constitutive Relation solver in OpenFOAM, *Under preparation*.
Elsever Publishing - Journal of Computational Physics

- **T. Chourushi, R.S. Myong**, Origin of High Weissenberg number singularity for the viscoelastic fluid flow over a confined cylinder, *Under preparation*.
Elsevier Publishing - Journal of non-Newtonian Fluid Mechanics

INTERNATIONAL/NATIONAL CONFERENCES

- **A.S. Vishnu, T. Chourushi, B. Sengupta, R.S. Myong**, Effects of bulk viscosity, vibrational energy, and rarefaction and vorticity fields around simple bodies at hypersonic speeds, *AIAA 2022*.
AIAA 2022 Conference

- **T. Chourushi, A.S. Vishnu, S. Singh, R.S. Myong**, Computational study of hypersonic rarefied gas flow over re-entry vehicles using the second-order Boltzmann-Curtiss constitutive model, 32^{nd} *PreRGD Worskshop*, S. Korea, July. 2021.
pre-RGD32 workshop

- **T. Chourushi, R.S. Myong**, Numerical simulation of single and multi-phase high weisseberg number flows, 26^{th} *Korean Society for Computational Fluids Engineering*, S. Korea, May. 2021.
KSCFE 2021 Conference

- **T. Chourushi, R.S. Myong**, Numerical Experiment on Origin of High Weissenberg Number Singularity in Viscoelastic Fluid over a Cylinder Placed in a Channel, 25^{th} *Korean Society for Computational Fluids Engineering*, Jeju, S. Korea, Oct. 2020.
KSCFE 2020 Conference

- **T. Chourushi, A. Rahimi, R.S. Myong**, A Three-Dimensional Mixed-Type Discontinuous Galerkin Method for the Navier-Stokes-Fourier Equations With Slip and Jump Conditions, 25^{th} *Korean Society for Computational Fluids Engineering*, Jeju, S. Korea, Oct. 2020.
KSCFE 2020 Conference

- **T. Chourushi, A. Rahimi, R.S. Myong**, Numerical implementation of Langmuir and Maxwell slip models in a modal discontinuous Galerkin method, *Korean Society for Industrial and Applied Mathematics*, Yonsei University, Seoul, S. Korea, vol. 14(1), May. 2019.
KSIAM 2019 Conference

- **T. Chourushi, A. Rahimi, T. K. Mankodi, R.S. Myong**, Numerical simulation of the cylindrical Couette flow of a rarefied gas using a mixed discontinuous Galerkin method, *Korean Society for Computational Fluids Engineering*, Jeju, S. Korea, May. 2019.
KSCFE 2019 Conference

- **T. Chourushi, S. Singh, R.S. Myong**, Numerical investigation of rarefied gas flows over a bluff body using a discontinuous Galerkin method, *Korean Society for Computational Fluids Engineering*, Seoul National University, Seoul, S. Korea, Nov. 2018.
KSCFE 2018 Conference

- **T. Chourushi, S. Singh, R.S. Myong**, Effect of rarefaction on cavity flows in the non-continuum regime, *International Symposium for Mechanics, Aerospace and Informatics Engineering (ISMAE)*, 13^{th}, Tokyo, Japan, Sept. 2018.
ISMAE 2018 -13^{th} Conference

- **S. Singh, T. Chourushi, Jo J. H, R.S. Myong**, Non-equilibrium effects of micro- and macro-scale shock-vortex interaction, *1st National Symposium on Shock Waves (NSSW)*, Seoul National University, Seoul, S. Korea. 2018.
NSSW 2018 -1^{st} Conference

- **T. Chourushi, M. Vaghela**, Numerical simulation of convection dominated flows using higher order finite volume method, *Korean Society for Computational Fluids Engineering*, pp. 113-114, 2017.11.
KSCFE 2017 Conference

AWARDS AND ACHIEVEMENTS

- **2017-2022 :** Published and presented some research outcome in journals and conferences, under the National Research Foundation of Korea (NRF 2017R1A2B2007634).

- **2019 :** Reviewer for 5^{th} International Conference on Computational Methods in Engineering and Health Sciences (ICCMEH), Universiti Putra Malaysia, Malaysia, Jul. 2019.

- **2018 :** Awarded best research paper **(first prize)** in 13^{th} International Symposium - ISMAE, Tokyo, Japan, Sept. 2018.

- **2017 :** Recipient of Brain-Korea 21 plus scholarship from government of South Korea, 2017-2022.

- **2012-2016 :** Recipient of MHRD government of India scholarship from Indian Institute of Technology (IIT) Indore under teaching assistantship, 2012-2016. Performed teaching assistantship during tenure.

- **2011 :** Recipient of Xi'an Jiatong scholarship from Xi'an Jiatong University, China.

ABILITIES

- **Senior member** of OpenFOAM-CFD community (Web-page: T. Chourushi), provides community service to OpenFOAM users.

MOTIVATION

"You learn more from failures than success. Don't let it stop you. Failures builds character."

PERSONAL INFORMATION

Date of Birth:	23/12/1985
Marital status:	Married
Language proficiency:	English, Hindi, Marathi, and Gujarati
Interests and hobbies:	Travelling, Music (Guitar), and Cricket
Permanent Address:	F/10, Hirakunj flats, Near water tank, Ghatlodia, Ahmedabad, Gujarat, INDIA Pin code: 380061.