

Dr. Vinay Kumar



Designation : Assistant Professor
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Contact at : Department of Mathematics, Siddhartha Academy of Higher Education (Deemed to be University), Vijayawada, Andhra Pradesh 520010, India

Education

Ph. D (Applied Mathematics and Scientific Computing)

2019, Defence Institute of Advanced Technology, Pune.

M.Sc.Tech. (Mathematics and Computer Science)

2013, Central University of Rajasthan, Ajmer.

B.Sc (Mathematics)

2010, University Maharaja's College, University of Rajasthan, Jaipur.

Experience

Period	Designation	Institution / Organization	Key Responsibilities
2025 Jan- Till date	Assistant Professor	Siddhartha Academy of Higher Education, Vijayawada, Andhra Pradesh 520010, India.	Research & Teaching
Oct, 2022- Sept 2024	Postdoctoral Research Scholar	University of Southern California, Los Angeles, CA 90089, USA.	Research
Jan, 2019- July, 2022	Project Scientist-C	Indian Institute of Technology Kanpur, Uttar Pradesh 208016, India.	Research
Jul, 2019- Oct, 2019	Vising Scientist	AORI, The University of Tokyo, Kashiwa, Chiba 277-0882, Japan	Research

Research Interests

Broad Area of Research:

Detonative Combustion, Coherent anti-Stokes Raman Spectroscopy, UQ and Machine Learning, Surrogate modeling, High Performance Computing, Numerical Weather Prediction. Heat and Mass Transfer in Porous Media.

Honors and Awards

- GATE 2013
- CSIR-UGC NET 2013
- GATE-DIAT PhD Scholarship
- BEST PLAYER of the Year 2012, Central University of Rajasthan.

Courses Taught

S.No	Course Name	Level (UG/PG)
1	Mathematical Modeling & Numerical Simulations	PG
2	Mathematical Methods	UG
3	Mathematics	UG
4	Quantitative aptitude	UG

Research Profile

Recent Publications

Some recent publication are:

- Gou, Zheming, Michael Ullman, **Vinay Kumar**, Roger Ghanem, and Venkat Raman. "Clustered Projection Pursuit Adaptation (CPPA) for Combustion Chemistry." *Journal of Computational Physics*, 114818, 2026.
- Xiaoshu Zeng, **Vinay Kumar**, Zheming Gou, Roger Ghanem, "Statistical Conditioning in Physics-Constrained Feature-to-Feature Inference for Detonative Wave Propagation." *Computer Methods in Applied Mechanics and Engineering*, 2025.
- Kumar, Arvind, Praveen V. Naidu, Mohamed El Atrash, **Vinay Kumar**, and Mahmoud A. Abdalla, "A compact dual-band ACS-fed frequency independent hook loop antenna for WLAN applications." *IETE Journal of Research*, vol. 70, no. 5 pp. 4523-4530, 2023.
- **Vinay Kumar**, Somanchi V. S. S. N. V. G. Krishna Murthy, and B V R. Kumar, "Multi-force effect on fluid flow, heat and mass transfer, and entropy generation in a stratified fluid-saturated porous enclosure," *Mathematics and Computers in Simulation*, vol. 203, pp. 328-367, 2023.

- **Vinay Kumar**, Somanchi V. S. S. N. V. G. Krishna Murthy, and B V R. Kumar, “Entropy generation in a chemically and thermally reinforced doubly stratified porous enclosure in a magnetic field,” *Physics of Fluids*, vol. 34, no. 1, pp. 013307, 2022.

Professional Social Media Profile Links

Details of publications and research contributions are available through the following profiles:

- [Google Scholar](#)
- [Scopus](#)
- [ORCID](#)
- [Research Gate](#)
- [LinkedIn](#)

Invited Speaker Talks

1.	Invited Speaker Talk titled “Magneto-Reactive Flows in Porous Enclosures: A Multi-Physics Modelling study,” at the Eighth day workshop on “Numerical Methods for multiphysics Problems”, under Indo-Norwegian Coperation Program at the Department of Mathematics, Central University of South Bihar, Gaya Ji, Bihar, India. [Feb 20-27, 2026]
2	Invited Speaker Talk titled “Uncertainty Quantification for High-Fidelity Simulations of Detonative Combustion Processes”, at the International SPARC Workshop on Computational and AI-driven Multiphysics Simulations in Porous Media (CAIMS-Poro-2025), at the he Department of Applied Mathematics, Defence Institute of Advanced Technology (DIAT) in Pune in collaboration with the University of California-Riverside (UCR)-USA, University of Michigan-Flint (UMF)-USA and Indian Institute of Technology Kanpur (IIT-Kanpur). [June 16-20, 2025]

Professional Development Activities - Participation

Faculty Development and Training Programs (at least 5 Days)	--
International / National Level Seminars	--
International / National Level Conferences	--
Workshops	--
Webinars	--

(Dr. Vinay Kumar)