Faculty Details proforma for DU Web-site

Title	**Dr.**	First Name	**RANDHEER**	Last Name	**SINGH**	Photograph
Designation	**Assistant Professor**					
Address	Department of Mathematics, University of Delhi, Delhi-110007					
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Educational Qualifications

Degree	Institution	Year
Ph.D.	University of Delhi, Delhi	2013
M. Sc. Mathematics	C. C. S. University, Meerut	2007
B. Sc.	C. C. S. University, Meerut	2005

Career Profile

Institution	Designation	Duration	Duties
Department of Mathematics, University of Delhi, Delhi-110007	Assistant Professor	Aug. 2014- Present	Post-Graduate Teaching and Research

Administrative Assignments

Member of various administrative committees of the Department

Areas of Interest / Specialization

Partial Differential Equations, Shock Waves, Gas Dynamics.

Subjects Taught

2009– 2014   Mathematics I, Mathematics II, Mathematics III, Mathematics IV, Partial Differential Equations, Operations Research.

2014–till date   Complex Analysis, Advanced Compressible Flows, Fluid Dynamics, Functional Analysis, Differential Equations, Methods of Applied Mathematics.

Research Guidance

Supervision of
- Doctoral Thesis, Awarded 01, under progress : 04
- Supervision of M. Phil. Dissertation awarded: 02, under progress: 01.

Publications Profile

Research papers published in Refereed/Peer Reviewed Journals
- "Existence and Interaction of Acceleration Wave with a Characteristic Shock in Transient

Pinched Plasma" (with J. Jena) *Meccanica (Springer)* <u>48</u> (2013) 733-738, Impact factor: 2.1.

- "Interaction of an Acceleration Wave With a Strong Shock in a Polytropic Reacting Gas" (with J. Jena) *Applied Mathematics and Computation (Elsevier)* <u>225</u> (2013) 638–644, Impact factor: 4.

- "Existence of Self-similar Solutions in Reacting Gases" (with J. Jena) *Shock Waves, (Springer)* <u>24</u> (2014) 211-218, Impact factor: 1.7.

- "Existence and Interaction of the Acceleration Wave with Elementary waves in a Reacting Gas" (with J. Jena) *Lobachevski Journal of Mathematics (Springer)* <u>34</u> (2013) 248-255.

- "One Dimensional Steepening of Waves in Non-ideal Relaxing Gas" (with J. Jena) *International Journal of Non-Linear Mechanics (Elsevier)* <u>77</u> (2015) 158–161, Impact Factor: 2.9.

- "Evolution of Weak Waves and Central Expansion Waves in a Non-ideal Relaxing Gas" (with J. Jena) *Ain Shams Engineering Journal (Elsevier)* <u>7</u> (2016) 409–413, Impact Factor: 3.1.

- "On evolution of non-linear waves in polytropic reacting gases" (with J. Jena) *Journal of Mathematical Chemistry (Springer)* <u>56</u> (2018) 232–246, Impact factor: 2.3.

- "Evolution of singular surface and interaction with a strong shock in reacting polytropic gases using Lie group theory" (with S. Shah) *International Journal of Non-Linear Mechanics (Elsevier)* <u>116</u> (2019) 173–180, Impact Factor: 2.9.

- "Collision of a steepened wave with a blast wave in dusty real reacting gases" (with S. Shah) *Physics of Fluids (AIP USA)* <u>31</u> (2019) 076103, Impact factor: 3.5.

- "Propagation of non-planar weak and strong shocks in a non-ideal relaxing gas" (with S. Shah) *Ricerche di* Matematica *(Springer)* <u>70</u> (2021) 371–393, Impact factor: 1.034.

- "Imploding shocks in real reacting gases with dust particles" (with S. Shah) *Journal of Mathematical Physics (AIP USA)* <u>61</u> (2020) Impact factor: 1.4.

- "Lie symmetries for analyzing interaction of a characteristic shock with a singular surface in a non-ideal reacting gas with dust particles, (with S. Shah) *Mathematical*

Methods in the Applied Sciences (Wiley), <u>44</u> (2021), 3804-3818 Impact factor: 2.8.

- "Steepened wave in two-phase Chaplygin flows comprising a source term" (with S. Shah and J. Jena), *Applied Mathematics and Computation (Elsevier),* <u>413</u> (2022), 126656 Impact factor: 4.09.

- "Riemann problem for van der Waals reacting gases with dust particles" (with L. Kipgen) *Ricerche di* Matematica *(Springer)*, DOI: https://doi.org/10.1007/s11587-021-00654-5, Impact factor: 1.034.

- "Converging shocks in van der Waals stiffened relaxing gases" (With B. K. Chaudhary) *Eur. Phys. J. Plus (Springer)* <u>137</u>(2022) https://doi.org/10.1140/epjp/s13360-022-02499-9, Impact factor: 3.9.

- "Collision of an acceleration wave with blast wave in van der Waals dusty reacting gases" (with L. Kipgen) *Physics of Fluids (AIP USA)* <u>34</u> (2022) 056106 Impact factor: 3.5.

Conference Organization/ Presentations (in the last three years)

1. "Evolution of breaking of waves in van der Waals gas" in International conference on Differential Geometry, Algebra and Analysis (ICDGAA-16) November 15-17, 2016, held at Jamia Millia Islamia University, Delhi.
2. "Evolution of jump in characteristic wave front in non-ideal reacting gases" in International Conference in Conjunction with 14th Biennial Conference of ISIAM to be held at Guru Nanak Dev University Amritsar from February 2-4, 2018.

Research Projects (Major Grants/Research Collaboration)

R & D Grant from University of Delhi for Oct. 2015- Sept. 2016 on "Nonlinear wave propagation in non-ideal relaxing gases."

Awards and Distinctions

- Research Fellow, Department of Mathematics, Netaji Subhas Institute of Technology (DU), New Delhi, Oct. 2008- Aug. 2009.
- Teaching-cum Research Fellow, Department of Mathematics, Netaji Subhas Institute of Technology (DU), Delhi, Aug. 2009 – Oct. 2012.

Association With Professional Bodies

Life Member:
- Indian Society of Theoretical and Applied Mechanics (ISTAM) IIT Kharagpur.

- Indian Society of Industrial and Applied Mathematics (ISIAM).

Other Activities

- Attended refresher course on "LATEX and MATLAB," held in NSIT, New Delhi on July 12-24, 2010.

- Attended "International Workshop on Advances in Computational Partial Differential Equations" from 7th February – 5th March, 2011 Organized by jointly BITS, Pilani-Goa Campus and Industrial Mathematics Group, IIT Bombay.

- Attended "Advanced Instructional School - Mechanics" from 5th –24th December, 2011 Organized by NBHM, at Hyderabad Central University, Hyderabad.

- Attended "Refresher Course in Mathematical Sciences" from 26th November to 16th December 2015 organized by Centre for Professional Development in Higher Education, University of Delhi, Delhi.

- Attended "Orientation Programme (OR-86)" from 25th November to 23th December 2016 organized by Centre for Professional Development in Higher Education, University of Delhi, Delhi.

- Attended "Refresher Course in Mathematics/ Operational Research/ Statistics and Computer Science" from 2nd to 15th December 2020 organized by Centre for Professional Development in Higher Education, University of Delhi, Delhi.

- Attended "Workshop on MOOCs, E-content Development and Open Educational Resources" from 15th – 21st December 2021 organized by Centre for Professional Development in Higher Education, University of Delhi, Delhi.