Dr. Anupam Sen

Curriculum Vitae

Present Position and Address

Dr. Anupam Sen
Assistant Professor
Mathematics Division
School of Advanced Sciences & Languages (SASL)
VIT Bhopal University
Kotri Kalan, Ashta, Bhopal-Indore Highway, Madhya Pradesh 466114
Email: sen.anupam123@gmail.com, anupamsen@vitbhopal.ac.in
Mobile: +91-8617890883, +91-7718763654

Work Experience

♣ Assistant Professor
School of Advanced Sciences & Languages (Mathematics Division)
VIT Bhopal University, Kothrikalan, Sehore, Madhya Pradesh - 466114, India
September 2024 - Till date.

♣ Post Doctoral Fellow
School of Mathematical Sciences
National Institute of Science Education and Research Bhubaneswar (NISER), Odisha-752050, India
September 2023 - July 2024

♣ Post Doctoral Fellow
TIFR Centre for Applicable Mathematics, Bengaluru, Karnataka-560065, India
September 2021- September 2023 (2 Years)

Complete Academic Qualifications

2021 **Doctor of Philosophy (Mathematics)**.
Institution: Indian Institute of Technology Kharagpur, Kharagpur, India
Title of the Thesis: **"Analytical study of delta shock waves in certain one-dimensional quasilinear hyperbolic system of conservation laws"**
Thesis supervisor : Dr. T. Raja Sekhar
Date of thesis Defense : 20th August, 2021

2014 **Master of Science (Mathematics)**.

Institution: Indian Institute of Technology Bombay, Mumbai, India

Marks Obtained : 7.29 (CGPA, Out of 10) (First class)

2012 **Bachelor of Science (Mathematics (Hons), Physics and Chemistry (Minor))**.

Institution: Midnapore College, Vidyasagar University, India

Marks Obtained : 72.625% (Hons)(First class),
Minor in Physics (60% marks) and Chemistry (75% marks)

2009 **Higher Secondary Education** (12^{th}).

Institution: Kharagpur Silver Jubilee High School, West Bengal Council of Higher Secondary Education

Marks Obtained : 84.2% (First division)

2007 **Secondary Education** (10^{th}).

Institution: Mawa I. C. High School, West Bengal Board of Secondary Education

Marks Obtained : 86.88% (First division)

Research Interests

Partial Differential Equations

Hyperbolic Conservation Laws

Nonlinear Waves

List of Publications (in peer reviewed journals)

2024 ♣ Abhrojyoti Sen and **Anupam Sen**, Existence of global entropy solution for Eulerian droplet models and two-phase flow model with non-constant air velocity, **Journal of Dynamics and Differential Equations** (2024) **(Springer) (SCI), Q1** (DOI: https://doi.org/10.1007/s10884-023-10337-4).

2023 ♣ B. Chhatria, **Anupam Sen** and T. Raja Sekhar, Self-similar viscosity approach to the Riemann problem for a strictly hyperbolic system of conservation laws, **Mathematical Methods in the Applied Sciences** 46 (6) (2023): 7265-7284 **(Wiley) (SCI), Q2** (DOI: https://doi.org/10.1002/mma.8969).

2023 ♣ **Anupam Sen** and T. Raja Sekhar, The multiplication of distributions in the study of delta shock waves for zero-pressure gasdynamics system with energy conservation laws, **Ricerche di Matematica** 72 (2) (2023): 653-678 **(Springer) (SCI), Q3** (DOI: https://doi.org/10.1007/s11587-021-00565-5).

2021 ♣ **Anupam Sen** and T. Raja Sekhar, The limiting behavior of the Riemann solution to the isentropic Euler system for logarithmic equation of state with a source term, **Mathematical Methods in the Applied Sciences** 44 (8) (2021): 7207-7227 **(Wiley) (SCI), Q2** (DOI: https://doi.org/10.1002/mma.7254).

2020 ♣ **Anupam Sen** and T. Raja Sekhar, Delta shock wave and wave interactions in a thin film of a perfectly soluble anti-surfactant solution, **Communications on Pure and Applied Analysis** 19 (5) (2020): 2641-2653 **(American Institute of Mathematical Sciences) (SCI), Q1** (DOI: 10.3934/cpaa.2020115).

2019 ♣ **Anupam Sen** and T. Raja Sekhar, Delta shock wave as self-similar viscosity limit for a strictly hyperbolic system of conservation laws, **Journal of Mathematical Physics** 60 (5) (2019): 051510 **(American Institute of Physics) (SCI), Q2** (DOI: https://doi.org/10.1063/1.5092668).

2019 ♣ **Anupam Sen** and T. Raja Sekhar, Structural stability of the Riemann solution for a strictly hyperbolic system of conservation laws with flux approximation, **Communications on Pure and Applied Analysis** 18 (2) (2019): 931-942 **(American Institute of Mathematical Sciences) (SCI), Q1** (DOI: 10.3934/cpaa.2019045).

2019 ♣ **Anupam Sen**, T. Raja Sekhar and D. Zeidan, Stability of the Riemann solution for a 2×2 strictly hyperbolic system of conservation laws, **Sadhana** 44 (11) (2019), Article number: 228 **(Springer) (SCI), Q2** (DOI: https://doi.org/10.1007/s12046-019-1212-z).

2017 ♣ **Anupam Sen**, T. Raja Sekhar and V. D. Sharma, Wave interactions and stability of the Riemann solution for a strictly hyperbolic system of conservation laws, **Quarterly of Applied Mathematics** 75 (3) (2017): 539-554 **(American Mathematical Society) (SCI), Q2** (DOI: https://doi.org/10.1090/qam/1466).

List of Communicated Papers

2024 ♣ S. S. Ghoshal, A. Parmar and **Anupam Sen**, Large data existence of initial value problem to the isentropic Euler equations with Coulomb-like friction term **(communicated)**.

2024 ♣ **Anupam Sen**, Stability of delta shock wave and generalized Riemann problem for the chromatography equations **(communicated)**.

Award & Honours

♣ Awarded Postdoctoral fellowship by National Board of Higher Mathematics (NBHM), Dept. of Atomic Energy, India, November 2024.

♣ Institute Post Doctoral Fellowship at National Institute of Science Education and Research Bhubaneswar (NISER), September 2023.

♣ Institute Post Doctoral Fellowship at TIFR Centre for Applicable Mathematics, Bengaluru, September 2021.

♣ **SRF** (Senior Research Fellow) of CSIR-UGC, India.

♣ **JRF** (Junior Research Fellow) of CSIR-UGC, India.

♣ Awarded **JRF** project (SERB, DST, Government of India (Ref No: SB/FTP/MS-047/2013)) entitled "Delta shock waves and wave inactions in hyperbolic system of conservation laws" at IIT Kharagpur (October 2015-December 2016)

♣ Qualified **Joint CSIR-UGC NET (December 2015)** with UGC research fellowship, **Rank-49**.

♣ Qualified **Graduate Aptitude Test in Engineering (GATE) 2015**, **AIR-192**.

♣ Qualified **Joint CSIR-UGC NET (June 2014)** with lecturership, **Rank-29**.

♣ Received **Merit cum Means** scholarship (July 2012-May 2014) during M.Sc. from IIT Bombay.

♣ Qualified **Joint Admission Test for M.Sc. (JAM) 2012**, **AIR-26**.

Conferences Participated in Abroad/ India

2023 ♣ Participated and gave a talk on "Formation of delta shock waves and vacuum states in the vanishing pressure limit of the Riemann solution to the isentropic Euler system for logarithmic equation of state with the Coulomb-like friction term" at the **International Congress on Industrial and Applied Mathematics (ICIAM-2023)** in **Tokyo, Japan**, August 20-25, 2023.

2019 ♣ Participated and gave a poster presentation on "Wave interactions and stability of the Riemann solution for a strictly hyperbolic system of conservation laws" at the **International Congress on Industrial and Applied Mathematics (ICIAM-2019)** in **Valencia, Spain**, July 15-19, 2019.

2018 ♣ Participated and gave a poster presentation on "Wave interactions in a thin film of a perfectly soluble anti-surfactant solution" at the **International Congress of Mathematicians (ICM 2018)** in **Rio de Janeiro, Brazil**, August 1-9, 2018.

2018 ♣ Participated and gave a conference talk on "Stability of the Riemann solution for a strictly hyperbolic system of conservation laws with flux approximation" at the **Indian Society of Theoretical and Applied Mechanics (ISTAM-2018)** in Dayanand Sagar University, Bangalore, India, December 20-23, 2018.

Workshops Participation

2017 ♣ Workshop on **AIS Linear Partial Differential Equations** at TIFR-CAM, June 19- July 8, 2017.

2018 ♣ Workshop on **AIS Differential Equations** at University of Hyderabad, June 4-23, 2018.

2019 ♣ Workshop on **AIS System of Conservation Laws: Theory and Numerics** at TIFR-CAM, August 5-17, 2019.

Teaching Experience

Courses as Instructor at VIT Bhopal University

♣ Applied Linear Algebra (MAT3002): Interim Semester 2024-25.

♣ Calculus (MAT1003): Interim Semester 2024-25.

Teaching Assistant at Indian Institute of Technology Kharagpur for the courses

♣ Mathematics I (MA 10001 : Calculus and Differential Equations), Autumn 2018-2019, 2019-2020.

♣ Mathematics II (MA 10002: Linear Algebra and Numerical Analysis), Spring 2017-2018, 2018-2019, 2019-2020.

♣ PDE (MA 20103), Autumn 2020-2021.

♣ Analytical Mechanics (MA51005), Autumn 2020-2021.

♣ Integral Equations and Variational Methods (MA51004/ MA40002/ MA61052), Spring 2020-2021.

♣ Teaching assistant, NPTEL course on "Laplace Transform" hosted on Swayam Portal. Instructor Prof. Indrava Roy, July- October 2021.

♣ Teaching assistant, NPTEL course on "An Invitation to Topology" hosted on Swayam Portal. Instructor Prof. Indrava Roy, January- April 2022.

Professional Membership

♣ Life Membership for Indian Mathematical Society (L/2019/155).

Computer Skills

Operating Systems: Windows

Programming Languages: C

Mathematical Software: MATLAB, Mathematica

For Documentation: TeXstudio, Texmaker, WinEdt, Microsoft Office (Word, Power Point, Excel)

Personal Details

Father's Name : Ashok Kumar Sen

Date of Birth: 21^{th} November, 1991

Sex : Male

Citizenship : Indian

Place of Birth : Chakmakrampur, Kharagpur, West Bengal, India

Permanent Address

Vill+P.O.- Chakmakrampur

P.S.- Kharagpur (Local), Dist.- Paschim Medinipur, Pin code- 721149

West Bengal, India

Name of the Referees

♣ **Dr. T. Raja Sekhar**

Associate Professor

Department of Mathematics,

Indian Institute of Technology Kharagpur

Kharagpur-721302, West Bengal, India

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- **Dr. Shyam Sundar Ghoshal**
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  Centre for Applicable Mathematics (CAM),
  Tata Institute of Fundamental Research (TIFR),
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  Bangalore 560065, Karnataka, India
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- **Dr. Rajesh Kannan**
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  Department of Mathematics,
  Indian Institute of Technology Hyderabad
  Kandi, Sangareddy, Telangana 502284, India
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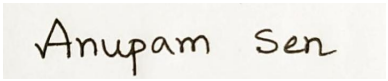
Declaration

I hereby declare that all the above information is correct to the best of my knowledge and belief.

Signature 

Place : Bhopal

Date : November 15, 2024