Bio Sketch

Swati Mishra

Assistant Professor

PhD (Indian Institute of Technology (ISM), Dhanbad, 2021)

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Dr. Swati Mishra is currently an Assistant Professor in the Department of Mathematics, Faculty of Mathematical Sciences, at the South Asian University, New Delhi, India. Before joining SAU, she was a recipient of prestigious Maharishi Kanad Postdoctoral Fellowship and worked as a post-doctoral fellow at the Delhi School of Climate Change and Sustainability, Institution of Eminence, University of Delhi. She also served as an Assistant Professor at Vellore Institute of Technology (VIT–AP), Amaravati, Andhra Pradesh.

Dr. Mishra was awarded with the IIT(ISM) Junior and Senior Research Fellowships (JRF & SRF) to pursue her doctoral studies at the Indian Institute of Technology (ISM), Dhanbad. Her doctoral research focused on Modeling Ecological Systems with Diffusion and Time Delay. She has published several research articles in reputed international journals from publishers such as Elsevier, Wiley, and Springer. Her research interests include mathematical modeling of ecological systems, with a particular focus on fear effects, the impact of global warming, pattern formation, stability analysis, and bifurcation theory.

Dr. Mishra received the prestigious Inder Mohan Thapar Research Award (IMTR) of the year 2022, in recognition of her excellence in research publications. She has been honored with the Young Scientist Award in Mathematics, 2019. She is a recipient of the Gold Medal in her B.Sc. (Hons) in Mathematics, Banaras Hindu University, Varanasi.

QUALIFICATIONS

- **PhD:** Indian Institute of Technology (ISM), Dhanbad, 2021
- **M.Sc. (Mathematics):** Banaras Hindu University, Varanasi, 2014
- **B.Sc. (Hons) Mathematics:** Banaras Hindu University, Varanasi, 2012

RESEARCH INTERESTS

- Mathematical Ecology and Population Dynamics
- Fear Effects and Global Warming in Species Interactions.
- Application of Differential equations (ODEs, PDEs, and DDEs)
- Pattern Formation, Turing Instability, Amplitude Equations
- Bifurcation Theory, Chaotic Dynamics, Blow-up Phenomena

SPONSORED RESEARCH PROJECT

Title: GIS-based SWOT Analysis of the Swachh Bharat Abhiyan in Rural and Urban Delhi
Funding Agency: ICSSR, Government of India, **Position Held:** Project Director
Duration: 2023–2024, **Grant Amount:** ₹14,00,000

RESEARCH PUBLICATIONS

1. **Swati Mishra**, R. K. Upadhyay, Spatial pattern formation and delay induced destabilization in predator-prey model with fear effect, **Mathematical Methods in the Applied Sciences** (Wiley Online Library), 45 (2022), 6801-6823, https://doi.org/10.1002/mma.8207.

2. **Swati Mishra**, R. K. Upadhyay, Exploring the cascading effect of fear on the foraging activities of prey in a three species Agroecosystem, **The European Physical Journal Plus** (Springer) 136 (2021) 1-36, https://doi.org/10.1140/epjp/s13360-021-01936-5.

3. **Swati Mishra**, R. K. Upadhyay, Strategies for the existence of spatial patterns in predator–prey communities generated by cross-diffusion, **Nonlinear Analysis: Real World Applications** (Elsevier) 51 (2020) 103018, https://doi.org/10.1016/j.nonrwa.2019.103018.

4. Vandana Tiwari, J. P. Tripathi, **Swati Mishra**, R. K. Upadhyay, Modeling the fear effect and stability of non-equilibrium patterns in mutually interfering predator–prey systems, **Applied Mathematics and Computation** (Elsevier) 371 (2020) 124948, https://doi.org/10.1016/j.amc.2019.124948.

5. R. K. Upadhyay, **Swati Mishra**, Yueping Dong, Yasuhiro Takeuchi, Exploring the dynamics of a tritrophic food chain model with multiple gestation periods, Mathematical Biosciences and Engineering (AIMS Press) 16 (2019) 4660-4691, https://doi.org/10.3934/mbe.2019234.

6. R. K. Upadhyay, **Swati Mishra**, Population dynamic consequences of fearful prey in a spatiotemporal predator-prey system, **Mathematical Biosciences and Engineering** (AIMS Press) 16 (2018) 338-372, https://doi.org/10.1016/j.jfranklin.2023.05.034.

7. R. K. Upadhyay, **Swati Mishra**, R. D. Parshad, Jingjing Lyu, Aladeen Al Basheer, Investigation of an explosive food chain model with interference and inhibitory effects, IMA Journal of Applied Mathematics (Oxford Academic) 82 (2017) 1209-1237, https://doi.org/10.1016/j.jfranklin.2019.11.049.

8. R. D. Parshad, R. K. Upadhyay, **Swati Mishra**, S. K. Tiwari, Swarnali Sharma, On the explosive instability in a three-species food chain model with modified Holling type IV functional response,

Mathematical Methods in the Applied Sciences (Wiley Online Library), 40 (2017) 5707-5726, https://doi.org/10.1002/mma.4419.

AWARDS AND HONORS

- IMTR (Inder Mohan Thapar Research) award of the year 2022
- Young Scientist in Mathematics award
- IIT (ISM) JRF & SRF holder during PhD.
- 3rd Rank Holder, M.Sc. Mathematics (Batch 2014), Banaras Hindu University, Varanasi.
- AIR – 2nd rank holder in M.Sc./M.A. Mathematics entrance examination, Banaras Hindu University, Varanasi.
- Prof B. B. Sinha Gold Medal in B.Sc. (Honours), Mathematics-2012, Banaras Hindu University, Varanasi.
- Qualified IIT-JAM (Mathematics), 2012.