Jinal Tapar

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SUMMARY[1]

Ms. Jinal Tapar is a Ph.D. scholar working under Dr. Naresh Emani (Google Scholar) at the department of Electrical Engineering, IIT Hyderabad and have submitted her thesis. Her research interest spans Semiconductor Nanophotonics, Non-Hermitian systems, All-dielectric tunable metasurfaces. In her Ph.D. with Dr. Emani's group, she investigated the prospects of parity-time ($\mathcal{PT}$) symmetric nanophotonic devices for light generation and manipulation bridging nanophotonics and quantum physics.

EDUCATION

PhD, Electrical Engineering — 07.2017 - present
Indian Institute of Technology, Hyderabad, India

MTech, Electronics and Communication Engineering — 08.2013 - 08.2015
Amravati University, Amravati, India

BTech, Instrumentation — 07.2006 - 04.2010
Government College of Engineering, Amravati, India

PROFESSIONAL CAREER

External Project Staff (INUP) — 11.2016 - 04.2017
Indian Institute of Technology, Bombay

Lecturer at ECE Dept. — 07.2015 - 06.2017
HVPM College of Engineering, Amravati

PROFESSIONAL RECOGNITION, AWARDS AND HONOURS

2020 **Best Poster Award** in Plasmonics and Photonics Symposium, IEEE ICEE 2020 conference

2015 **University Color coat holder** for best research project at state level

RESEARCH PROJECTS

Thesis related: Optical gain enhancement in semiconductor nanostructures, Effect of surface recombination on carrier lifetime, PT-symmetric metasurfaces for light generation and manipulation, Multipole analysis of gain-loss nanoantenna, dipole emission in a PT-symmetric cavity

Collabarative: Light generation from MIM plasmonic tunnel junctions, spatio-temporal modulation, and Mid-IR photodetection

TEACHING ASSISTANT EXPERIENCE

Undergraduate courses: Semiconductor Fundamentals, Electronic Devices and Circuits, Physics of MOS Transistors, Engineering Electromagnetics, NPTEL course - Introduction to Semiconductor Devices

Postgraduate courses: Introduction to Nanophotonics, VLSI Technology, and Microfabrication and Device Simulation Laboratory

[1] Last Updated: November 11, 2021

Publication Summary

4 refereed journal articles, 8 Conference Proceedings/talks

Serial Journal Articles

5. **Jinal Tapar**, S. Kishen, and Naresh Emani, “Generalized Kerker effect in PT-symmetric nanoantenna array" *(Under review)*

4. **Jinal Tapar**, S. Kishen, and Naresh Emani, “Dynamically tunable asymmetric transmission in PT-symmetric phase gradient metasurface", ACS Photonics Article ASAP IF: 7.529 [doi]

3. **Jinal Tapar**, S. Kishen, and Naresh Emani, “Spectral singularities and asymmetric light scattering in PT-symmetric 2D nanoantenna arrays." Optics Letters 45, no. 18 (2020): 5185-5188. IF: 3.776 [doi]

2. **Jinal Tapar**, S. Kishen, P. Kumar, Kaushik Nayak, and Naresh Emani, “Enhancement of the optical gain in GaAs nanocylinders for nanophotonic applications." Journal of Applied Physics 127, no. 15 (2020): 153102. IF: 2.546 [doi]

1. Kishen, Saurabh, **J. Tapar**, and Naresh Emani, “Enhanced light emission from gap plasmons in nano-strip MIM tunnel junctions." Journal of Optics 22, no. 9 (2020): 095006. IF: 2.753 [doi]

Conference Proceedings/Talks

9. **Jinal Tapar**. Non-Hermitian nanophotonics: Tailoring light with gain and loss. SPIE IITB student chapter Online Invited Lecture Series - 2021. (Invited Talk)

8. **Jinal Tapar**, S. Kishen, Naresh Emani, "Dynamically Tunable Asymmetric Transmission in PT symmetric Metasurfaces” SPIE Active Photonic Platforms XIII, San Diego, USA, 1-5 August 2021 [link] (Oral)

7. **Jinal Tapar**, S. Kishen, Naresh Emani, “Spectral singularities and broadband unidirectional invisibility in 2D PT-symmetric metamaterial” META, University of Warsaw, Poland, 20-23 July 2021 [link] (Poster)

6. Kishen Saurabh., **J. Tapar**, Naresh Emani, “Enhanced light generation due to hybridization of lattice and gap plasmon modes in periodic MIMtunnel junction” META, University of Warsaw, Poland, 20-23 July 2021 (Poster)

5. **Jinal Tapar**, Naresh Emani, “Exceptional scattering in PT-symmetric GaInP nanoantenna metasurfaces.” Photonics and Plasmonics symposia, IEEE ICEE, IIT Delhi (virtual), 26-28 November 2020 (Best poster award) [link]

4. **Jinal Tapar** , S. Kishen, and Naresh Emani, “Tunable Spectral Singularities with Asymmetric Directional Response in PT-symmetric 2D Nanoantenna Array." In Frontiers in Optics, pp. FM2E-3. Optical Society of America, 2020. (Oral) [doi]

3. Ramya Akshita, **J. Tapar**, and Naresh Emani, “Experimental Verification of Enhanced Photoluminescence in p-doped GaAs using Fluorescence Lifetime Measurements." In 2019 Workshop on Recent Advances in Photonics (WRAP), pp. 1-3. IEEE, 2019. [doi] (Poster)

2. Kishen, Saurabh, **J. Tapar**, and Naresh Emani. “Study of Gap Plasmons in 2D Finite Metal-Insulator-Metal Tunnel Junctions." In 2019 Workshop on Recent Advances in Photonics (WRAP), pp. 1-4. IEEE, 2019. [doi] (Poster)

1. **Jinal Tapar**, S. Kishen, K. Nayak, Naresh Emani, “Optimizing the Gain in Semiconductor Nanostructures for All-Dielectric Active Metamaterial Applications.” ICMAT, Marina Bay Sands, Singapore, 23-28 June 2019 (Poster)