

Research Publications:

1. Ravi Roushan Kumar, **Devendra Chack** and Prantik Basu, "Dual-Mode Non-Blocking 4×4 and 8×8 MZI-Based Photonic Switch for Scalable Programmable PICs" in *IEEE Transactions on Nanotechnology* (under revision)
2. Diksha Maurya, **Devendra Chack** "Compact and Efficient Inverse-Designed Digital Metamaterial Silicon Photonic Antenna for Optical Phased Array Applications" *IEEE Journal of Quantum Electronics* (under major revision)
3. Santhosh Kollati, **Devendra Chack** and Diksha Maurya, "Ultra-Compact Binary Encoded Inverse-Designed 1×4 Silicon Power Splitter with Arbitrary Power Ratios", *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, (under major revision)
4. Ravi Roushan Kumar, Prantik Basu, and **Devendra Chack** "Wavelength-Selective Spatio-Spectral CNOT Gate Based on a Dual-Ring Resonator for Integrated Quantum Photonics" *IEEE Transactions on Quantum Engineering* (under major revision)
5. R. Guchhait, D. Maurya and **Devendra Chack**, "Compact on-chip Dual Grating Filter using Backward Mode Conversion," in *IEEE Journal of Lightwave Technology*, vol. 43, no. 15, pp. 7305-7310, 1 Aug.1, 2025, doi: <https://doi.org/10.1109/JLT.2025.3573514>
6. Ravi Roushan Kumar, Prantik Basu, and **Devendra Chack** "Adaptive Phase Control of 4×4 Clements MZI Mesh for Stabilizing Noisy Gaussian Boson Sampling in Integrated Quantum Photonics" *Advanced Quantum Technologies* 9, no. 7 (2026): e70353. <https://doi.org/10.1002/qute.70353>
7. G. Kumar, R. R. Kumar and **Devendra Chack**, "3 × 3 Non-Blocking Dual-Mode Optical Switch on Silicon on Insulator," in *IEEE Transactions on Nanotechnology*, vol. 25, pp. 275-279, 2026, doi: [10.1109/TNANO.2026.3720882](https://doi.org/10.1109/TNANO.2026.3720882).
8. R. Guchhait, S. Hassan, **Devendra Chack** and G. Kumar, "Broadband On-Chip Three Mode (De) Multiplexer Using SWG-Asymmetric Adiabatic Coupling," in *IEEE Photonics Technology Letters*, vol. 37, no. 8, pp. 497-500, 15 April 15, 2025, doi: <https://doi.org/10.1109/LPT.2025.3556783>
9. Diksha maurya , **Devendra Chack** and Vicky G, "Compact and Efficient Transverse Spliced Waveguide Grating Antenna for Integrated Optical Phased Array," in *IEEE Transactions on Nanotechnology*, vol. 23, pp. 665-672, 2024, doi: <https://doi.org/10.1109/TNANO.2024.3459472>
10. **Devendra Chack** and G. Kumar, "On-chip Non-Blocking 4 × 4 and 8 × 8 Photonic Switches Using MMI-MZI Configuration for Next-Generation Data Center Networks," in *IEEE Transactions on Nanotechnology*, vol. 24, pp. 216-223, 2025, doi: 10.1109/TNANO.2025.3558256
11. Gaurav Kumar, **Devendra Chack**, 1 × N (N = 2, 4) dual-mode optical switch based on multimode interference coupler. *Opt Quant Electron* 57, 236 (2025). <https://doi.org/10.1007/s11082-025-08174-4>

12. Sunil Narayan Thool, **Devendra Chack**, "Next-generation optical networks: Integrating adaptive FEC rate LDPC and higher order probabilistic constellation shaping", *Optical Fiber Technology*, Volume 94, 2025, 104324, ISSN 1068-5200, <https://doi.org/10.1016/j.yofte.2025.104324>
13. Sunil Narayan Thool, **Devendra Chack**, "Phase noise mitigation in higher order probabilistic constellation shaping for high-capacity optical communications" *Physical Communication*, Volume 74, 2026, 102946,
14. Shamsul Hassan, **Devendra Chack** and Lorenzo Pavesi "Reconfigurable and Multifunction All Optical Logic Gates using Thermo-optic phase shifter for optical computing" *AIP Advances* 12, 055304 (03 May 2022) <https://doi.org/10.1063/5.0086185>
15. **Devendra Chack**, Shamsul Hassan, and Mohd Qasim. "Broadband and low crosstalk silicon on-chip mode converter and demultiplexer for mode division multiplexing." *Applied Optics* 59.12 (2020): 3652-3659. <https://doi.org/10.1364/AO.390085>
16. Shamsul Hassan, **Devendra Chack**, and Varad Mahajan. "High extinction ratio and low loss polarization beam splitter based on multimode interference for PICs." *Applied Optics* 59.11 (2020): 3369-3375. <https://doi.org/10.1364/AO.387418>
17. Rukmani Singh, **Devendra Chack**, and Vishnu Priye, "SNROW-based highly sensitive label-free surface biosensor for hepatitis B detection," *Appl. Opt.* 61, 6510-6517 (2022). DOI No.: <https://doi.org/10.1364/AO.463800>
18. **Devendra Chack**, Shamsul Hassan and Amitesh Kumar (2021) "Broadband and Mode insensitive MMI based mode power splitter for MDM" *Laser Physics (IOP)* **31** 126205 <https://iopscience.iop.org/article/10.1088/1555-6611/ac312c>
19. Shamsul Hassan, and **Devendra Chack**. "Design and analysis of polarization independent MMI based power splitter for PICs" *Microelectronics Journal* 104 (2020): 104887.
20. **Devendra Chack**, and Shamsul Hassan. "Design and experimental analysis of multimode interference-based optical splitter for on-chip optical interconnects." *Optical Engineering* 59.10 (2020): 105102.
21. **Devendra Chack**, Sunil Thool, High Capacity 64-Quadrature Amplitude Modulation Based Optical Coherent Transceiver for 60 GHz Radio over Fiber System. *Wireless Pers Commun* **132**, 183–204 (2023). <https://doi.org/10.1007/s11277-023-10606-x>
22. Rukmani Singh, Vishnu priye and **Devendra Chack**, "Highly sensitive refractive index based sensor for DNA hybridization using subwavelength grating waveguide" *IETE Technical Review* (2022)
23. Sunil Thool, **Devendra Chack**, Amitesh Kumar (2021) "Coherent Detection-Based Optical OFDM, 60 GHz Radio-over-Fiber Link Using Frequency Quadrupling, and Channel and Carrier Phase Estimation" *Front. Phys.* **9**:749497

24. **Devendra Chack**, V. Kumar, S. K. Raghuwanshi and Dev P Singh "Design and analysis of O-S-C triple band wavelength division demultiplexer using cascaded MMI couplers" *Optics Communications*, Volume 382, pp. 324–331, (2017)
25. **Devendra Chack**, V. Kumar and S. K. Raghuwanshi, Design and performance analysis of InP/InGaAsP-MMI based 1310/1550-nm wavelength division demultiplexer with tapered waveguide geometry, *Opto-Electronics Review*, Volume 23, Issue 4, pp. 271–277, (2015),

Conferences:

1. Diksha Maurya and **Devendra Chack**, "Sub Wavelength Grating Based High Directionality Silicon Photonic Antenna for Beam Steering Application," 2026 IEEE Silicon Photonics Conference (SiPhotonics), Ottawa, ON, Canada, 2026, pp. 1-2, doi: [10.1109/SiPhotonics68911.2026.11520704](https://doi.org/10.1109/SiPhotonics68911.2026.11520704). (The paper was presented by Devendra Chack at the IEEE Silicon Photonics Conference 2026, held in Ottawa from April 13–15, 2026)
2. K. Santhosh, Diksha. Maurya and **Devendra Chack**, "Design and Monte Carlo-Based Fabrication Robustness Analysis of a Binary-Encoded 1×2 Silicon Power Splitter," 2026 IEEE Silicon Photonics Conference (SiPhotonics), Ottawa, ON, Canada, 2026, pp. 1-2, doi: [10.1109/SiPhotonics68911.2026.11520763](https://doi.org/10.1109/SiPhotonics68911.2026.11520763). (The paper was presented by Devendra Chack at the IEEE Silicon Photonics Conference 2026, held in Ottawa from April 13–15, 2026)
3. R. R. Kumar, R. Guchhait, and **Devendra Chack**, "Tilted Subwavelength Grating Assisted Directional Coupler Based WDM," in Advanced Photonics Congress (IPR, Networks, NOMA, SOLITH, SPPCom) , Technical Digest Series (Optica Publishing Group, 2025), paper JTU3A.5. <https://doi.org/10.1364/IPRSN.2025.JTU3A.5> (Advanced Photonics Congress, 13–17 July 2025, Marseille, France)
4. D. Maurya, **Devendra Chack**, and R. R. Kumar, "Highly efficient and compact non-uniform waveguide grating antenna for off-chip coupling," in Advanced Photonics Congress (IPR, Networks, NOMA, SOLITH, SPPCom) , Technical Digest Series (Optica Publishing Group, 2025), paper JTU3A.6. <https://doi.org/10.1364/IPRSN.2025.JTU3A.6> (Advanced Photonics Congress, 13–17 July 2025, Marseille, France)
5. **Devendra Chack**, Shamsul Hassan, and Abhishek Kumar "Design and analysis of polarization beam splitter based on cascaded MMI on SOI", Proc. SPIE 11283, Integrated Optics: Devices, Materials, and Technologies XXIV, 1128320 (25 February 2020); <https://doi.org/10.1117/12.2544405> Photonics West OPTO 2020 (SPIE, the international society for optics and photonics), at **San Francisco, USA**)
6. S. Hassan and **Devendra Chack**, "MZI based Silicon photonic circuits for arbitrary power splitting application", *JSAP-OSA Joint Symposia 2018*, paper 21p_211B_8. at Nagoya Japan 18–21 September 2018.

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