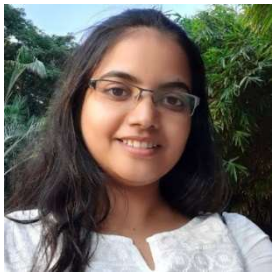
CURRICULUM VITAE

Dr. Suchita



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Research Interests : Optics/Photonics, Fiber-Optics, Nonlinear Optics, Fiber Lasers & Fiber Amplifiers

Webpages
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➢ CURRENT AFFILIATION

- **Assistant Professor, Jan 2024 – till present**
  Department of Pure and Applied Physics
  Guru Ghasidas Vishwavidyalaya (A Central University)
  Bilaspur-495009, Chhattisgarh, India

➢ POST DOCTORAL RESEARCH EXPERIENCE

- **Research Engineer (Oct 2023 – Dec 2023)**
  Xlim Research Institute, Faculty of Science and Technology
  University of Limoges, Limoges, France
  Research Work: Hollow core fibers

- **Research Associate III (Jan 2021 – Sep 2023)**
  Department of Instrumentation and Applied Physics, Indian Institute of Science Bangalore, Bengaluru, India
  Research Work: Designing ultra-low loss fibers, Single photon transmission, Quantum dot doped fiber amplifiers/lasers

- **Project Scientist (Sep 2018 – Dec 2020)**
  Department of Electrical Engineering, Indian Institute of Technology Madras, Chennai, India
  Research work: Characterization (linear and nonlinear) of few mode fiber, Intermodal stimulated Brillouin scattering in few mode fiber, Fabrication of photonic lantern/mode coupler, Fiber mode analysis using commercial softwares - LUMERICAL and COMSOL

➢ EDUCATIONAL DETAILS

- **Doctor of Philosophy (Ph.D) *in Physics* (July 2012–August 2018)**
  Specialization: Photonics
  Department of Physics, Indian Institute of Technology Kanpur, Kanpur, India
  Thesis Title: *Continuous Wave, Broadband Erbium-Doped Fiber Laser and Study of Its Temporal Coherence Characteristics*

- **Master of Science (M.Sc.) *in Physics* (2010-2012)**
  (under M.Sc.+Ph.D Dual Degree Programme)
  Department of Physics, Indian Institute of Technology Kanpur, Kanpur, India

- **Bachelor of Science (B.Sc.) Honors *in Physics* (2007-2010)**

  Banaras Hindu University, Varanasi, India

➢ ACHIEVEMENT

- ***Best PhD Thesis Award*** *by Indian Laser Association (ILA) in National Laser Symposium (NLS-27), Dec. 5-8, 2018 held at RRCAT Indore, India.*

➢ LIST OF PUBLICATIONS

Journal Publications

1. Debanuj Chatterjee, Sugeet Sunder, Mrudula Krishna, ***Suchita Yadav***, Alexej Sysoliatin, Konstantin Gochelashvili, Sergey Semjonov, Deepa Venkitesh and Andrey Konyukhov, "A Comprehensive Study on Phase Sensitive Amplification and Stimulated Brillouin Scattering in Nonlinear Fibers with Longitudinally Varying Dispersion*", MDPI Photonics, Vol. 3, 2024*.
2. Archana Kaushalram, ***Suchita*** and Asha Bhardwaj, "Enhancing single-mode guidance using avoided crossings in anti-resonant hollow-core fibers with five nested cladding tubes", *Optics Communications, vol. 551, pp. 130036 1-9, 2024*.
3. Archana Kaushalram, ***Suchita*** and Asha Bhardwaj, "Optimization of hollow-core fibers with elliptical tubes for improved single-mode guidance", *Optical Fiber Technology, vol. 81, pp. 103546 1-8, 2023.*

4. ***Suchita***, Archana Kaushalram and Asha Bhardwaj, “Study of Macro-Bending Loss Dependence on Design Parameters of Anti-Resonant Hollow Core Fibers”, *Optical and Quantum Electronics*, *vol. 55, pp. 540 1-15, 2023.*
5. Sudip K. Chatterjee, Archana Kaushalram, ***Suchita*** and Asha Bhardwaj, "Designing hollow core nested anti-resonant fiber with ultra-low loss using finite difference eigen mode solver", *Journal of Optics, vol. 24, pp. 115801 1-10, 2022.*
6. ***Suchita***, Sudip K. Chatterjee, Archana Kaushalram and Asha Bhardwaj, "Parametric study of anti-resonant fiber designs with nesting elements for ultra-low loss over visible band", *Optical Fiber Technology, vol. 71, pp. 102910 1-10, 2022.*
7. A I Konyukhov, P A Mavrin, ***Suchita***, A Sobhanan, D Venkitesh, K S Gochelashvili and A A Sysoliatin, “Phase-sensitive amplification in dispersion oscillating fibers”, *Laser Physics, vol. 31, pp. 085402 1-8, 2021*.
8. ***Suchita***, Balaji Srinivasan, Govind P. Agrawal and Deepa Venkitesh, “Role of the Modal Composition of Pump in the Multi-peak Brillouin Gain Spectrum in a Few-Mode Fiber”, *Optics Communications, vol. 494, pp. 127052 1-7, 2021.*
9. Karamdeep Singh, Priyanka Sharma, ***Suchita***, Awakash Dixit, Balaji Srinivasan, R. David Koilpillai and Deepa Venkitesh, “Theoretical and experimental investigation of the sources of error in stochastic parallel gradient descent based digital modal decomposition technique”, *OSA Continuum, vol. 4, pp. 1916-1932, 2021.*
10. ***Suchita*** and R. Vijaya, “Demonstration of phase correlation between the spectral lines of a broadband fiber laser”, *IEEE Journal of Quantum Electronics, vol. 54, no. 5, pp. 1600508 1-8, 2018.*
11. ***Suchita*** and R. Vijaya, “Temporal coherence study of four wave mixing products with and without the laser cavity effect,” *Applied Optics*, vol. 57, no. 5, pp. 1075–1082, 2018.
12. ***Suchita*** and R. Vijaya, “Effect of source spectral width and its temporal coherence in the interference pattern of a Mach Zehnder interferometer,” *Optics Communications*, vol. 402, pp. 478–482, 2017.
13. ***Suchita*** and R. Vijaya, “Temporal coherence of a low-power erbium-doped fiber laser with spectrally broadened output,” *Journal of Optical Society of America A*, vol. 34, no. 6, pp. 1004-1010, 2017.
14. ***Suchita Yadav***, Govind Kumar, and R. Vijaya, “Spectral features of anti-Stokes and Stokes modes generated by stimulated Raman scattering in liquid toluene,” *Applied Physics B*, vol. 122, no. 10, pp. 257 1-10, 2016.

15. ***Suchita***, Soham Sarbadhikari, and R. Vijaya, “Spectral broadening due to intra-cavity four-wave mixing at low pump powers in erbium-doped fiber ring laser,” *International Journal of Modern Physics B*, vol. 28, no. 12, pp. 1442008 1-14, 2014.

Conference Proceedings/Presentations

1. ***Suchita***, Archana Kaushalram, and Asha Bhardwaj, "Optimization of Bending Loss for Higher Order Modes of Anti-Resonant Hollow Core Fibers", Conference on Lasers and Electro-Optics/Europe (CLEO/Europe 2023) and European Quantum Electronics Conference (EQEC 2023), Technical Digest Series (Optica Publishing Group, 2023), paper ci_p_9.
2. Archana Kaushalram, ***Suchita***, Vishal Sharma, and Asha Bhardwaj, “Investigation of Avoided-Crossings in Five-Tube Hollow-Core Fibers in Visible Wavelength Band”, Frontiers in Optics + Laser Science 2022, Technical Digest Series (Optica Publishing Group, 2022), paper JW4A.44.
3. Sudip K. Chatterjee, ***Suchita*** and Asha Bhardwaj, ”Low-loss hollow core silica fiber with anti-resonant tubes for quantum state transmission in the visible regime” in *Frontiers in Optics + Laser Science 2021*, Technical Digest Series (Optica Publishing Group, 2021), paper JTu1A.47.
4. ***Suchita***, Balaji Srinivasan, Deepa Venkitesh, “Higher Order Acousto-Optic Interaction in Two Mode Fiber in case of Intramodal and Intermodal Brillouin Scattering”, OSA Advanced Photonics Congress (AP) 2020 (IPR, NP, NOMA, Networks, PVLED, PSC, SPPCom, SOF) JTu3F.14, 2020.
5. Karamdeep Singh, ***Suchita***, Deepa Venkitesh, “Mode resolved bending loss measurement of few-mode fiber utilizing digital modal decomposition”, OSA Advanced Photonics Congress (AP) 2020 (IPR, NP, NOMA, Networks, PVLED, PSC, SPPCom, SOF) JTu3F.13, 2020.
6. G. K. Shaw, Shyam S., Foram S., ***Suchita***, S. Swain, D. Venkitesh, A. Prabhakar, “Random Number Generation with Few Mode Fibres”, Quantum 2.0 Conference 2020 © OSA 2020
7. ***Suchita***, Smaranika Swain, Balaji Srinivasan, Deepa Venkitesh, “Demonstration of mode dependent stimulated Brillouin scattering in graded-index few mode fibers”, Proceedings of the International Conference on Optics and Electro-Optics, Dehradun, India (ICOL 2019), 258, Chapter-49, 2020.
8. Invited Talk***, Suchita*** and R. Vijaya, “Temporal coherence and phase correlations in the spectrum of a broadband fiber laser”, Photonics 2018, IIT Delhi, Dec. 12-15 2018.
9. Deeksha Jachpure, ***Suchita*** and R. Vijaya, “Role of spectral features in the temporal coherence characteristics of a broadband erbium-doped fiber laser”, PHOTONICS 2018, IIT Delhi, Dec. 12-15, 2018.

10. ***Suchita***, "Continuous wave, broadband, erbium-doped fiber laser and study of its temporal coherence characteristics", National Laser Symposium (NLS-27), RRCAT Indore, Dec. 3-6, 2018.
11. ***Suchita*** and R. Vijaya, "Laser line selection from a broadband erbium doped fiber ring laser using a versatile intra-cavity filter", Frontiers in Optics, Washington, Sep. 17-21, 2017.
12. ***Suchita*** and R. Vijaya, "Temporal coherence of a broadband fiber laser studied using a Mach-Zehnder interferometer," PHOTONICS 2016, IIT Kanpur, Dec. 5-8, 2016.
13. ***Suchita*** and R. Vijaya, "Mach-Zehnder fiber interferometer in spectral analysis of source characteristics" Workshop in Recent Advances in Photonics (WRAP) 2015, IISc, Bengaluru, Dec. 16-17, 2015.
14. ***Suchita***, Govind Kumar and R. Vijaya, "Phase matching characteristics of Stimulated Raman Scattering in liquid toluene" 8th India-Singapore Symposium on Condensed Matter Physics, IIT Kanpur, Feb. 25-27, 2015.
15. ***Suchita***, Govind Kumar, and R. Vijaya, "Stimulated Raman scattering in toluene for efficient new wavelength generation," PHOTONICS 2014, IIT Kharagpur, Dec. 13-16, 2014.
16. Ankita Jain, ***Suchita***, K. Pradeep Kumar and R. Vijaya "Pump suppressed four-wave mixing in optical fibers for correlated photon generation using feedback technique" SPIE Photonics West, San Francisco, Feb.1-6, 2014.

Other Publications

- Invited paper, ***Suchita*** and R. Vijaya, Temporal Coherence studies of a Continuous-wave, Broadband Erbium-doped Fiber Laser, Submitted to *Kiran*: A Bulletin of the Indian Laser Association.
- Invited paper, Gyanendra Kumar, ***Suchita*** and R. Vijaya, Nonlinear dynamical and nonlinear optical studies on low-power erbium doped fiber laser, *Kiran*: A Bulletin of the Indian Laser Association, vol. **25**, no. 2, pp. 4-8, 2014.

➢ RESEARCH SKILLS

Experimental Work

- Designed the setup for all-fiber based single photon generation and detection.
- Characterization of a low loss fiber for single photon transmission in visible range.
- Characterization of few mode fibers: differential modal group delay, mode dependent bending loss.
- Intramodal and intermodal stimulated Brillouin Scattering in few mode fiber.

- Fabrication of photonic lantern/mode coupler using Glass processor (GPX-3400, VYTRAN): tapering of a fiber, fusion of two fibers**.**
- Generation of four-wave mixing using a highly nonlinear fiber medium, study of its phase matching and conversion efficiency.
- Designing of erbium-doped fiber amplifiers and fiber lasers pumped by 980nm diode laser and output in the wavelength range of 1550nm.
- Designing a broadband source (1540-1565 nm) by using multiple four wave mixing processes inside the ring cavity of the erbium-doped fiber laser.
- Designing of a fiber-based Mach-Zehnder Interferometer to characterize the temporal coherence of an optical source.
- Designing a free space optical setup to study Stimulated Raman scattering using a liquid toluene pumped by a frequency-doubled pulsed Nd:YAG laser. The newly generated Stokes and Anti-Stokes mode are studied with their phase matching angles.

Simulation Work

- Simulation of ultra-low loss fiber designs based on anti-resonant hollow core fiber using COMSOL for the application in single photon transmission
- Solving rate equations and pump propagation of Quantum dot-doped fiber amplifier and lasers
- Simulation of SBS suppressed highly nonlinear fiber by manipulating the fiber dispersion profile by solving the coupled amplitude equation using finite difference time domain method.
- Simulation of acoustic mode solutions for single mode fiber, highly nonlinear fiber and few mode fiber using Finite difference method.
- Simulation of modal solutions and beam propagation of multimodes using a commercial software – LUMERICAL mode solutions and COMSOL MultiPhysics.
- Modelling of intramodal and intermodal Brillouin gain spectrum with higher order acoustic modes.
- Modelling of generation of multi-pump four-wave mixing upto second order inside fibers using MATLAB.
- Modelling of interferometer output for different input sources of different spectral characteristics using MATLAB.

➢ OTHER RELEVANT INFORMATION

- Admission to M.Sc.+Ph.D dual-degree programme from a *Joint Admission test for M.Sc. in Indian Institute of Technology* (IIT-JAM) in 2010.
- **Teaching Assistantship:** *Course-PHY224, Optics Lab* for two semesters, *Course-PHY461/462, M.Sc. Lab* for seven semesters.
- **Mentoring Experience** for M.Sc. and M.Tech students in lab in topics related to Fiber-Optics and Nonlinear Optics.
- Participation in *Department of Science & Technology (DST) and Science & Engineering Research Council (SERC)* sponsored School on "Nonlinear Optics and Material" for three weeks in Chennai, Feb-2014, India.
- **Vice-President & Secretary of OPTICA** *(formerly known as (OSA)) Student Chapter of IIT Kanpur* for one year (2016-2017), Member of OPTICA from 2016 till date.
- Volunteer for outreach events related to SPIE and IEEE Photonics Society.