


Faculty Profile: For University Website

DEPARTMENT OF METALLURGICAL & MATERIALS ENGINEERING

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Educational Qualification:	<ul style="list-style-type: none"> • Ph. D. (1996), Devi Ahilya Vishvidyalaya, Indore, M. P, India • M. Sc. (1990), Birla Institute of Technology, Mesra, Ranchi, Jharkhand, India 	
Courses Taught:	<p>5 years Integrated M. Sc. (Applied Physics);</p> <p>Sem I:</p> <ul style="list-style-type: none"> • Basic Physics-I (for EVS and Life Sciences students) <p>Sem II:</p> <ul style="list-style-type: none"> • Basic Physics-II (for EVS and Life Sciences students) • Modern Physics <p>Sem V:</p> <ul style="list-style-type: none"> • Fiber and Integrated Optics <p>Sem VI:</p> <ul style="list-style-type: none"> • Electricity and Magnetism-II <p>Sem VII:</p> <ul style="list-style-type: none"> • Classical Mechanics-II <p>Sem VIII</p> <ul style="list-style-type: none"> • Atomic and Molecular Physics-II <p>Sem IX</p> <ul style="list-style-type: none"> • Nano-Photonics <p>2 years M. Sc. (Physics);</p> <p>Sem I:</p> <ul style="list-style-type: none"> • Classical Mechanics and relativity <p>Sem II:</p> <ul style="list-style-type: none"> • Atomic and Molecular Physics • Statistical Mechanics <p>Sem III:</p> <ul style="list-style-type: none"> • Quantum Electronics • Fiber and Integrated Optics 	

	<p>Sem IV:</p> <ul style="list-style-type: none"> • Optoelectronics and Optical Computing • Fourier Optics and Holography • Nanophotonics <p>B.Sc./M.Sc. (NEP) Sem III:</p> <ul style="list-style-type: none"> • OPTICS <p>Ph. D. Coursework</p> <ul style="list-style-type: none"> ▪ Nanophotonics and applications ▪ Laser Physics and Nonlinear Optics ▪ Research Methodology ▪ Research Publications and Ethics
Additional role/ responsibility:	<ol style="list-style-type: none"> 1. Head, Department of Physics 2. Chief Vigilance Officer
Administrative Experience (in CUJ):	<ul style="list-style-type: none"> • Head Department of Physics 20 Oct.2012 to 19 Oct.2018 • Head (i/c) Department of Physics s 20 Oct.18 to 30 June 2020. • Head Department of Physics since 01 Feb.2024 -- • Dean, School of Natural Sciences from 14th Nov.2017 to 15 Nov 2020. • Dean R&D 7 Sept 2021-14 Sept 2022 • Board of Studies Member since 14 Feb. 2014 --- • Board of School Member since 6 Nov. 2015 --- • Academic Council Member since 20 Oct. 2012 --- • Executive Council Member from 21 Nov. 2017 to 20 Nov 2020. • Chief Vigilance Officer since 29 July 2016 ---- • Member IQAC since 10 June 2016 ---- • Controller of examinations (i/c) 16 Jan. 2016. to 13 May 2018 • Professor In-charge of library since 7 Jan.2016 to 25 Oct. 2017 • Coordinator, International Studies & Research Cell since 1 Nov. 2012 to 29 Oct. 2013 • Chairman, International Studies & Research Cell From 30 Oct. 2013 to 23 Nov. 2020 • President, Institutions Innovation Council of CUJ From 12 Oct 2018 to 23 Nov 2020. • Member, COURT since 10 Oct. 2023

Awards & Honours	Young Scientist Award 1995 by M. P. Council of Science & Technology.			
Research Area:	Nanophotonics (Photonic crystals and devices), Optical solitons (propagation and devices), Optical Waveguide devices, Optical computing, Fibre optics, Integrated optics.			
Research Guidance:	Ph. D.: 08(Awarded:06; Submitted: 01; Pursuing: 01)			
	Topic	Name of the student	Name of guide/co-guide	Status
	Study of Induced Nonlinear Optical Fiber Waveguides and Devices(Ph.D. Thesis)	Mr. Ram Krishna Sarkar	Sarang Medhekar	Awarded
	Investigation of Light Beam Propagation in Nonlinear Media for All-optical devices (Ph.D. Thesis)	Mr. Punya Prasanna Paltani	Sarang Medhekar	Awarded
	Modeling and Analysis of Nonlinear Waveguide Devices for All-Optical Logic Gates(Ph.D. Thesis)	Mrs. Arpita Srivastava	Sarang Medhekar	Awarded
	Investigation of Optical Beam Propagation in Nonlinear Media: Spatial Soliton Formation and Their Interaction for All-Optical Devices(Ph.D. Thesis)	Mrs. Shraddha Prasad	Ram Krishna Sarkar/Sarang Medhekar	Awarded
	Investigation of Light Propagation through Photonic Crystals (PCs) for All Optical Devices.	Mr. Man Mohan Gupta	Sarang Medhekar	Awarded
	Investigation of photonic crystal based optical devices and components for all optical switching	Mr. Alok Kumar	Sarang Medhekar	Awarded
	Design and Simulation of All-Dielectric Two Dimensional (2D) Photonic Crystal Devices and Sensors	Ms Puja Sharma	Sarang Medhekar	Submitted 12 Feb. 2024
Brief introduction:	<p>Prof. Sarang Medhekar is an active researcher in the area of applied optics since his doctoral work. He was awarded OPTEL fellowship for the doctoral research. He is the recipient of Young Scientist Award by MPCOST Govt. of MP in 1995 for his work on new kind of photonic device “optical power filter” proposed by him which was later published in world’s one of the most recognized journals of Optical Society of America “Optics Letters”</p> <p>Prof. Medhekar is working in Central University of Jharkhand since Oct 2012. He has successfully completed many governments funded projects. Prof. Medhekar has 60 international journal publications with many papers in top journals like</p>			

	<p>Applied Physics Letters, Optics Letters, IEEE Photonics Technology Letters, Optics & Laser Technology, Optik etc. He is the inventor of 05 patents also. He was invited twice at Hartford University, USA for experimentation on his proposal “all-optical passive transistor”. Prof Medhekar visited Penn state university for the Academic Leadership programme of MHRD, Govt of India. He has guided seven doctoral theses. His current areas of research interest are photonic devices, all-optical switching, optical computing, Photonic Crystals and soliton propagation.</p>										
<p>Project (Completed/ Ongoing)</p>	<ol style="list-style-type: none"> 1. Sarang Medhekar (PI) and P. K. Barhai (Co-PI) received a research Grant of Rs. 3.10 Lakhs from UGC on 1 July 2003 for the project titled “Theoretical Investigation of Induced Nonlinear Optical Fiber Waveguides and Devices” (Project Reference No.: 10-25 /2003 (SR); Duration 3.5 years; Status: Completed. 2. Sarang Medhekar (PI) and P. K. Barhai (Co-PI) received a research Grant of Rs. 8.87 Lakhs from BRNS-DAE on 16 Feb. 2004 for the project titled “Investigation of the effects of higher order nonlinearities on optical pulse propagation in semiconductor doped glass fibers and waveguides” (Project Reference No.: 2003/34/19/BRNS/1951; Duration 4 years; Status: Completed. 3. Sarang Medhekar (PI) received a research Grant of Rs. 24.68 Lakhs from DST on 10.2.2009 for the project titled “Modeling and Analysis of Mach-Zhender Interferometer based Nonlinear Waveguide Devices for All-Optical Switching and Logic Gates” (Project Reference No.: SR/S2/LOP-27/2007; Duration 3 years; Status: Completed. 4. Sarang Medhekar (PI) received a research Grant of Rs. 8.278 Lakhs from UGC on 30.12.2008 for the project titled “Investigation of Optical Beam Propagation in Nonlinear Media: Spatial Soliton Formation and Their Interaction for All-Optical Devices” (Project Reference No.: 34-24/2008 (SR); Duration 3 years; Status: Completed. 5. Sarang Medhekar (PI) received a research Grant of Rs. 24.15 Lakhs from DST on 20.5.2013 for the project titled “Modeling and Analysis of all-optical switching devices based on waveguide and photonic crystal geometry” (Project Reference No.: SR/S2/LOP-0025/2012; Duration 3 years 4 Months; Status: Completed <p>Also</p> <ul style="list-style-type: none"> • Supervised two (02) CSIR (SRF) projects. (completed) • Mentor of DST project under DST WOMEN SCIENTISTS SCHEME (WOS-A). (completed) 										
<p>Patents</p>	<table border="1"> <thead> <tr> <th data-bbox="399 1698 467 1772">Sl No</th> <th data-bbox="467 1698 1094 1772">Description</th> <th data-bbox="1094 1698 1247 1772">Patent no.</th> <th data-bbox="1247 1698 1500 1772">inventors</th> </tr> </thead> <tbody> <tr> <td data-bbox="399 1772 467 1883">1</td> <td data-bbox="467 1772 1094 1883">MECHANICAL LOAD STABILIZER WITH LOAD DEPENDENT STEPLESS GEAR RATIO VARIATION SYSTEM</td> <td data-bbox="1094 1772 1247 1883">223097</td> <td data-bbox="1247 1772 1500 1883">Sarang Medhekar</td> </tr> </tbody> </table>	Sl No	Description	Patent no.	inventors	1	MECHANICAL LOAD STABILIZER WITH LOAD DEPENDENT STEPLESS GEAR RATIO VARIATION SYSTEM	223097	Sarang Medhekar		
Sl No	Description	Patent no.	inventors								
1	MECHANICAL LOAD STABILIZER WITH LOAD DEPENDENT STEPLESS GEAR RATIO VARIATION SYSTEM	223097	Sarang Medhekar								

	2	EXTRACTION OF ONE BEAM FROM A MIXTURE OF TWO COAXIALLY CO-PROPAGATING MUTUALLY INCOHERENT BEAMS OF SAME FREQUENCY, EXTRACTION OF DATA BITS LOADED ON ONE COHERENT BEAM MIXED WITH THE DATA BITS LOADED ON ANOTHER COHERENT BEAM OF SAME FREQUENCY AND COHERENCE DIVISION MULTIPLEXING	261064	Sarang Medhekar and Puny Prasanna Plaltani
	3	ALL-OPTICAL NOT/XOR, AND NAND GATES, ALL-OPTICAL BISTABLE, ASTABLE MULTIVIBRATORS AND ALL-OPTICAL HALF ADDER USING NOVEL ALL-OPTICAL SWITCHING IN A MACH-ZENDER INTERFEROMETER	296862	Sarang Medhekar and Puny Prasanna Plaltani
	4	ALL-OPTICAL PASSIVE TRANSISTOR ADAPTING A MACH-ZEHNDER INTERFEROMETER	304332	Sarang Medhekar and Puny Prasanna Plaltani
	5	A SYSTEM AND A METHOD TO SYNTHESIZE OPTICAL DEVICES OF DESIRED FUNCTIONALITY	531675	Sarang Medhekar
Articles Published/ Accepted:	<p>Research publications (in Journals)</p> <p>2024</p> <ol style="list-style-type: none"> 1. Sarang Medhekar, A gateway to synthesis of all-optical devices of desired functionalities, Results in Optics 15 (2024) 100644, https://doi.org/10.1016/j.rio.2024.100644, 2. Puja Sharma, Sarang Medhekar, "Fluid nonlinear coefficient sensor" designed on 2D photonic Crystal, Journal of Optics (Springer Link), https://doi.org/10.1007/s12596-023-01617-9. <p>2023</p> <ol style="list-style-type: none"> 1. Puja Sharma and Sarang Medhekar, Ring resonator-based highly sensitive chemical/biochemical sensor created on holes in silicon slab 2D photonic crystal, Journal of Optics (Springer Link), 20 March 2023. https://doi.org/10.1007/s12596-023-01149-2, 2. Puja Sharma and Sarang Medhekar, Frequency comb generation in rod type 2D photonic crystal coupled cavity waveguide, Journal of Optics (Springer Link), 13 May 2023. https://doi.org/10.1007/s12596-023-01218-6, 3. Nilaksha Ghosh, Arnab Das, Puja Sharma, Sarang Medhekar, Photonic crystal 			

power limiter based on fano-like resonance, Journal of Optics (Springer Link), 30 Sept. 2023. <https://doi.org/10.1007/s12596-023-01460-y>

2022

1. Puja Sharma, Man Mohan Gupta, Nilaksha Ghosh, **Sarang Medhekar**, 2D photonic crystal based all-optical add-drop filter consisting of square ring resonator, Materials Today: Proceedings 66 (2022) 3344–3348. <https://doi.org/10.1016/j.matpr.2022.07.062>.
2. Puja Sharma and **Sarang Medhekar**, Ultra-compact photonic crystal nanocavity-based sensor for simultaneous detection of refractive index and temperature, <https://doi.org/10.1007/s12596-022-01037-1>, Journal of Optics (Springer Link), Vol. 52 23 December 2022
3. Puja Sharma, Nilaksha Ghosh, Man Mohan Gupta and **Sarang Medhekar**, “Add-Drop Filter” and “Refractive Index and Temperature Sensor” using 2D Photonic Crystal Ring Resonator, International Journal of Optics and Photonics (IJOP) Vol. 16, No. 2, Summer-Fall, 2022.

2021

1. Satchi Kumari, Alok Kumar and **Sarang Medhekar**, Slow light in rod type 2D photonic crystal waveguide comprising of cavity: optimization and analysis, **Optik - International Journal for Light and Electron Optics** 231 (2021) 166438 April 2021. <https://doi.org/10.1016/j.ijleo.2021.166438>
2. Ram Krishna Sarkar, Anjan Biswas and **Sarang Medhekar**, Investigation of Coupled Self-Tapering / Self-Uptapering of Soliton Beams in Nonlinear Media, Optik - International Journal for Light and Electron Optics 232 (2021) 166511, April 2021. <https://doi.org/10.1016/j.ijleo.2021.166511>
3. A. K. Mishra, **Sarang Medhekar**, J. Parashar, Mukesh Kumar, Investigation of plasma cladded optical fiber for dynamic manipulations of its propagation properties, Optik - International Journal for Light and Electron Optics 232 (2021) 166537 April 2021. <https://doi.org/10.1016/j.ijleo.2021.166537>
4. A.K. Mishra, **Sarang Medhekar**, J. Parashar, Mukesh Kumar, Dynamic control over group speed of light in plasma cladded optical fiber: An analytical approach, Results in Optics 4 (2021) 100087 August 2021. <https://doi.org/10.1016/j.rio.2021.100087>

2020

1. Alok Kumar and **Sarang Medhekar**, All optical NOR and NAND gates using four circular cavities created in 2D nonlinear photonic crystal, Optics & Laser Technology, (2020) vol 123, p-105910. March 2020. <https://doi.org/10.1016/j.optlastec.2019.105910>

2019

1. Alok Kumar and **Sarang Medhekar**, Wavelength Filter Based on Photonic Crystal Resonant Cavity Nonlinear Optics, Quantum Optics, (In press)
2. Alok Kumar and **Sarang Medhekar**, All optical NOT and NOR gates using interference in the structures based on 2D linear photonic crystal ring resonator, Optik - International Journal for Light and Electron Optics 179 (2019) 237–243

2018

1. Alok Kumar, Man Mohan Gupta and **Sarang Medhekar**, All-optical NOT and AND Gates based on 2D Nonlinear Photonic Crystal Ring Resonant Cavity, Optik-International Journal for Light and Electron Optics 167 (2018) 164–169

2016

1. Man Mohan Gupta and **Sarang Medhekar**, Asymmetric light reflection at the

reflecting layer incorporated in a linear, time-independent and non-magnetic two-dimensional photonic crystal, Euro Physics Letters, 114 (2016) 54002, doi: 10.1209/0295-5075/114/54002

2. Man Mohan Gupta and **Sarang Medhekar**, Three port asymmetric (three port ordered-route) light transmission in a linear, time-independent and non-magnetic structure of photonic crystals, Euro Physics Letters 113, 34004 (2016)
3. Man Mohan Gupta, **Sarang Medhekar**, All-optical NOT and AND gates using counter propagating beams in nonlinear Mach-Zehnder interferometer made of photonic crystal waveguides, Optik-International Journal for Light and Electron Optics 127 (2016) 1221–1228.

2015

1. A. H. Arnous, Mohammad Mirzazadeh, Seithuti Moshokoa, **Sarang Medhekar**, Qin Zhou, M. F. Mahmood, Anjan Biswas, Milivoj Belic, Solutions in optical Meta materials with trial solution approach and Backlund transform of Riccati equation, Journal of Computational and Theoretical Nanoscience Vol. 12, 5940–5948, 2015
2. S Prasad, RK Sarkar, **Sarang Medhekar**, Coupled tapering/uptapering of dark soliton pair in nonlinear media, Optik-International Journal for Light and Electron Optics 126 (2015) 677–680

2014

1. Man Mohan Gupta and **Sarang Medhekar**, A versatile optical junction using photonic band-gap guidance and self-collimation, Applied Physics Letters 105, 131104 (2014); 105, 131104 (2014), doi: 10.1063/1.4896622
2. Man Mohan Gupta and **Sarang Medhekar**, Switching Behavior of Nonlinear Mach-Zehnder Interferometer Based on Photonic Crystal Geometry, Pramana Vol. 82, No. 6, 2014, pp. 1061–1074.
3. R. K. Choubey, **Sarang Medhekar**, R. Kumar S. Mukherjee Sunil Kuma, Study of nonlinear optical properties of organic dye by Z-scan technique using He-Ne laser, J Mater Sci: Mater Electron, DOI 10.1007/s10854-014-1743-3, Jan 2014.

2013

1. Shraddha Prasad, Ram Krishna Sarkar and **Sarang Medhekar**, Coupled tapering/uptapering of soliton pairs in nonlinear media, Optik-International Journal for Light and Electron Optics., 124 (2013) 6661–6665, <http://dx.doi.org/10.1016/j.ijleo.2013.05.108>.

2012

1. Arpita Srivastava **Sarang Medhekar**, Effect of change in core width and core refractive index on the switching behaviour of a nonlinear Mach-Zehnder interferometer, Optical Engineering 51(9), 094601 (September 2012).
2. Arpita Srivastava and **Sarang Medhekar**, Switching Behavior of a Nonlinear Mach-Zehnder Interferometer with Exponentially Saturable Nonlinearity, Optical Engineering, Vol. 51, Pages 074604-1 to 074604-4, 2012.
3. D. B. Lata, A. Mishra and **Sarang Medhekar**, Effect of hydrogen and LPG addition on the efficiency and emissions of a dual fuel diesel engine, International Journal of Hydrogen Energy Vol. 37, Pages 6084–6096, 2012.

2011

1. Arpita Srivastava, Man Mohan Gupta, Sarang **Medhekar**, Signal amplification based on the local nonlinear Mach-Zehnder interferometer, Optics & Laser Technology, Vol. 44, 492–496, 2011.
2. D. B. Lata, A. Mishra and **Sarang Medhekar**, Investigations on the combustion parameters of a dual fuel diesel engine with hydrogen and LPG as secondary fuels, International Journal of Hydrogen Energy Vol. 36, 13808–13819, 2011.

3. Shraddha Prasad, Ram Krishna Sarkar, Arpita Srivastava and **Sarang Medhekar**, Coupled Propagation in Electromagnetically Induced Transparent Medium; Thirring Type Soliton Pairs and Breather Pairs, Journal of Electromagnetic Waves and Application, Vol. 25, 923–933, 2011.
4. Arpita Srivastava, **Sarang Medhekar**, Switching behavior of a nonlinear Mach-Zehnder interferometer: Saturating nonlinearity, Optics & Laser Technology, Vol. 43, Pages 1208 to 1211, 2011.
5. Arpita Srivastava, Ram Krishna Sarkar, Shraddha Prasad and **Sarang Medhekar**, Coupled tapered / uptapered optical beams, Optik-International Journal for Light and Electron Optics., 122 (2011) 2039– 2043.
6. Arpita Srivastava and **Sarang Medhekar**, Switching of One Beam by Another in a Kerr Type Nonlinear Mach-Zehnder Interferometer, Optics & Laser Technology, vol. 43, issue 1, pp. 29-35(2011).
7. Punya Prasanna Paltani and **Sarang Medhekar**, All-optical Circulator Based on Cross Phase Modulation in a Nonlinear Mach-Zehnder Interferometer, Optik-International Journal for Light and Electron Optics., Volume 122, Issue 5, March 2011, Pages 464-466.
8. Punya Prasanna Paltani and **Sarang Medhekar**, Optimally Stabilized Beam Pairs, Optik-International Journal for Light and Electron Optics., vol. 122, issue 1, pp. 70-75(2011).

2010

1. Arpita Srivastava, Punya Prasanna Paltani and **Sarang Medhekar**, Switching Behaviour of a Nonlinear Mach-Zehnder Interferometer, Pramana, Vol.74 Number 4 (2010) p. 575-590.
2. Ram Krishna Sarkar and **Sarang Medhekar**, Mutual-focusing of two co-propagating beams and formation of trapped spatial breather pair in saturable nonlinear media, Optik-International Journal for Light and Electron Optics., 121 (2010) p-339–346.

2009

1. R. K. Sarkar and **Sarang Medhekar**, Spatial soliton pairing of two cylindrical beams in saturable nonlinear media, Progress In Electromagnetics Research M, Vol. 9, 53-64, 2009.
2. **Sarang Medhekar** and Punya prasanna Paltani, All-Optical transistor using counter propagating beams in a Nonlinear Mach-Zehnder Interferometer, Fiber and Integrated Optics Vol. 28 Number 4 (2009) p. 268-274.
3. **Sarang Medhekar** and Punya prasanna Paltani, Novel All-Optical Switch using Nonlinear Mach-Zehnder Interferometer, Fiber and Integrated Optics Vol.28 Number 3 (2009) p. 229-236.

2007

1. **Sarang Medhekar**, Ram Krishna Sarkar and Punya P. Paltani, Soliton Pairing of Two Coaxially Co-Propagating Mutually Incoherent 1-D Beams in Kerr Type Media, Optica Applicata, XXXVII, 243-259 (2007).
2. Ram Krishna Sarkar and **Sarang Medhekar**, Spatial Solitons of desired intensity and width and their Self-Tapering/Uptapering in Cubic Quintic Nonlinear Medium, Physica Scripta, Vol. 76, (2007) pp-683-688.
3. Punya P. Paltani and **Sarang Medhekar**, Synchronous Couplers Made of Symmetric and Asymmetric Slabs, Nonlinear Optics, Quantum Optics Vol. 36 , (2007) pp-129-145.
4. **Sarang Medhekar** and Punya Prasanna Paltani, All-Optical Switching and Tenable Wavelength Filtering in Grating Assisted Directional Coupler, Nonlinear

Optics, Quantum Optics Vol. 36 , (2007) pp-81-90.

2006

1. **Sarang Medhekar** and Punya Prasanna Paltani, Proposal for an All-Optical Switch, IEEE Photonics Technology Letters Vol. 18, No. 15 Aug. (2006) pp-1579-1581.
2. **Sarang Medhekar** and Ram Krishna Sarkar, Passive, "Self-Trapped Family" All-Optical Half Adder using All-Optical X-OR and AND Gate, Czechoslovak J. Physics, Vol. 56, No. 4 (2006) pp-359-366.
3. **Sarang Medhekar** and Ram Krishna Sarkar, All-optical bistable and astable multivibrators, Nonlinear Optics, Quantum Optics, vol. 35, Sept. 2006, pp-287-296.
4. **Sarang Medhekar**, R. K. Sarkar and P. P. Paltani, Coupled Spatial-Soliton Pairs in Saturating Medium, Optics Letters vol. 31, No. 1 Jan. 2006, pp-77-79.
5. Ram Krishna Sarkar and **Sarang Medhekar**, Propagation of Doughnut mode in Nonlinear Media, Nonlinear Optics, Quantum Optics Vol. 35, Sept. (2006) pp-275-286.

2005

1. **Sarang Medhekar** and Ramkrishna Sarkar, All-optical Passive Transistor, Optics Letters, vol. 30, No. 8, April 2005, pp-887-889.

2003

1. S.Konar, P.K.Barhai and **Sarang Medhekar**, Displacement and Deflection of Optical Beams by Nonlinear Planer Waveguide, J. of Nonlinear Optical Physics & Materials, Vol. 12, No. 1, p.101-112 (2003) USA.

1996

1. **Sarang Medhekar**, M.S.Sodha and S.Konar, Optical Power filter: A new kind of passive nonlinear optical device, Optics Letters, Vol.20, No.4, p-305(1996).

1995

1. **Sarang Medhekar**, S. Konar and M.S.Sodha, Self tapering of elliptic beams in elliptic core nonlinear fibers, Optics Letters, Vol.20, No.21, p-2192 (1995).
2. **Sarang Medhekar**, S.Konar and Rajkamal, Successive uptapering and stationary self trapped propagation of a laser beam in a saturating nonlinear medium, Lasers & Particle Beams, Vol.13, No.4, p-559 (1995).
3. **Sarang Medhekar**, S.Konar and Rajkamal, Profile of radial inhomogeneity for stationary self trapped propagation of laser beams in a nonlinear absorbing/amplifying medium with arbitrary nonlinearity, IL NUOVO CIMENTO D, Vol.17, p-351,(1995).
4. **Sarang Medhekar**, S.Konar and Rajkamal, Self tapering and uptapering of a self guided laser beam in an absorption/gain medium with arbitrary nonlinearity, Pramana-Journal of physics, vol.44, No.3, p-249(March1995).

1994

1. M.S.Sodha, **Sarang Medhekar**, S.Konar, A.Saxena and Rajkamal, Absorption/Amplification induced self tapering and uptapering of a laser beam in a saturable nonlinear medium: large nonlinearity, Optics Letters, Vol.19, No.15, p-1110(Aug.1st 1994).

1993

1. **Sarang Medhekar**, Rajkamal and A.Saxena, Propagation of Gaussian laser beams in a nonlinear radially inhomogeneous absorbing medium with arbitrary nonlinearity, Ind. J. Pure & Appl. Phys.Vol.31, p-605-609(Sept.1993).

1991

1. **Sarang Medhekar**, Maximum possible transverse velocity in special relativity,

	Physics Education, Vol.7, No.4, p-320-322(1991).
Major Media attention for Novel proposal of Photonic transistor	https://www.photonics.com/Articles/Theorists_Propose_an_All-Optical_Transistor/p5/a21758
Books and Book Chapters:	--
Seminar/ Workshop/ Conference Participation:	<p>Work published/presented/abstracted in National/International conference/conference proceedings;</p> <ol style="list-style-type: none"> 1. S. Medhekar et. al. "Self tapering/uptapering of self guided beams" National laser symposium held at Center for Advanced Technology, C.A.T., Indore, INDIA during Jan.29-Feb.1, 1994. 2. S. Medhekar et. al. "Paper on optical device" presented in 11th M.P.Young scientists congress held at Rani Durgavati Univ., Jabalpur, INDIA during Feb.28-March 1st 1996 3. S. Medhekar et. al. "Highly sensitive optical power filters", Photonics-96, international conference on photonics and related areas held during 9-13 Dec.1996 at Indian Institute of Technology IIT, Chennai, INDIA. 4. Sarang Medhekar, S Konar, P.K.Barhai, "All-optical pulse width manipulation of stationary temporal soliton" Photonics-2002, International conference on photonics and related areas held in Dec.2002 at Tata Institute of Fundamental Research, Mumbai, INDIA. 5. Ram Krishna Sarkar, S. Medhekar, and Punya Prasanna Paltani, "Analysis of Cross focusing of Gaussian beams in Saturating Nonlinear medium", National Laser Symposium (NLS-4), , held in Dec.2004 at Bhabha Atomic Research Centre, Mumbai, INDIA. 6. S. Medhekar and Ram Krishna Sarkar, "All-optical passive Isolator", Photonics 2004, International conference on photonics and related areas held in Dec.2004 in Cochin, INDIA, pp-121. 7. S. Medhekar and Ram Krishna Sarkar, "Propagation of doughnut mode in various nonlinear media", Asia Pacific Microwave Conference, International conference held in Dec.2004 in New Delhi, INDIA.. 8. Punya P. Paltani and S. Medhekar "Synchronous Couplers: Symmetric and Asymmetric Directional Coupler". Seminar on Optics of Photonic Band gap Materials, 28-30 Oct 2005 at IIT Kharagpur, INDIA 9. Punya P. Paltani and S. Medhekar, "Study of Grating Assisted Directional Couplers" National Laser Symposium "NLS-5", 7-10 Dec. 2005 at Vallore Institute of Technology, Vallore, INDIA. 10. Ram Krishna Sarkar and S. Medhekar, "Soliton pairing in nonlinear media", Photonics-2006, 3-16 Dec 2006 at University of Hyderabad, INDIA. page-375.

11. Punya P. Paltani and S. Medhekar "Switching Behaviour of Nonlinear Refraction Based optical Switch". 'Photonics 2006' 3-16 Dec 2006 at University of Hyderabad, INDIA. page-137.
12. Punya P. Paltani and S. Medhekar, "Theoretical Investigation of Directional Couplers and Their Synchronization". 'CODEC-06', 18-20 Dec 2006 at University of Kolkata, INDIA. page-205.
13. S. Medhekar and Ram Krishna Sarkar, "Co-propagating beams in saturating nonlinear media", NASDEC (2)-06, 2-4 Nov. 2006 at Birla Institute of Technology, Mesra, INDIA page-141.
14. Punya P. Paltani and S. Medhekar, "Analysis of Nonlinear Refraction Using Split Step Method", NASDEC (2)-06, 2-4 Nov. 2006 at Birla Institute of Technology, Mesra, INDIA page-151.
15. S. Medhekar and Ram Krishna Sarkar, "Analysis of Trapped Spatial Breather Pair in Saturable Nonlinear Media", National Laser Symposium (NLS-6), 5-8 Dec. 2006 at Raja Raman Center for Advanced Technology, Indore, INDIA. page-70.
16. Punya P. Paltani and S. Medhekar "Solitonic and Nearly Solitonic Beam Pairs" National Laser Symposium (NLS-6), 5-8 Dec. 2006 at Raja Raman Center for Advanced Technology, Indore, INDIA, page-69.
17. Attended Short term course on AutoCAD and Pro-E held in Nov. Dec. at Birla Institute of Technology, Mesra, Ranchi-835215
18. Shraddha Prasad, Ram Krishna Sarkar, Arpita Srivastava and S. Medhekar "THIRRING TYPE BREATHER PAIRS AND SOLITONS", PHOTONICS 2010: 10th International Conference on Fiber Optics & Photonics, December 11-15, 2010, IIT Guwahati, India.
19. S. Medhekar, Arpita Srivastava and Punya Prasann Paltani "PULSE SWITCHING IN A NONLINEAR MACH-ZEHNDER INTERFEROMETER", PHOTONICS 2010: 10th International Conference on Fiber Optics & Photonics, December 11-15, 2010, IIT Guwahati, India.
20. Arpita Srivastava, Man Mohan Gupta and S. Medhekar "SIGNAL AMPLIFICATION BY USING A NONLINEAR MACH-ZEHNDER INTERFEROMETER", PHOTONICS 2010: 10th International Conference on Fiber Optics & Photonics, December 11-15, 2010, IIT Guwahati, India.
21. P.P.Paltani, S.Medhekar, C. Senel, F.O.Ilday "ACCURATE GAIN MODELING FOR Er/Yb DOPED FIBER AMPLIFIER" PHOTONICS 2010: 10th International Conference on Fiber Optics & Photonics, December 11-15, 2010, IIT Guwahati, India.
22. Arpita Srivastava, Man Mohan Gupta and S. Medhekar "Switching Behavior of a Nonlinear Mach-Zehnder Interferometer With Different Saturable Nonlinearities", Second International Conference on Trends in Optics and Photonics (IConTOP) December 7 - 9, 2011, Kolkata, India.
23. Man Mohan Gupta, Arpita Shrivastava and S. Medhekar "Switching Behavior of Photonic Crystal based Nonlinear Mach-Zehnder Interferometer", Second International Conference on Trends in Optics and Photonics (IConTOP) December 7 - 9, 2011, Kolkata, India.
24. Ram Krishna Sarkar, Shraddha Prasad and S. Medhekar "Spatial Soliton

	<p>Pairing in Radially Inhomogeneous Nonlinear Media” Second International Conference on Trends in Optics and Photonics (IConTOP) December 7 - 9, 2011, Kolkata, India.</p> <p>1. S. Medhekar, R. Kumar, S.Mukherjee and R. K. Choubey “Study of Nonlinear Refraction of Organic Dye by Z-scan Technique using He-Ne Laser” AIP Conf. Proc. 1512, 470 (2013); 3-7 December 2012 Indian Institute of Technology, Bombay, Mumbai, India</p>
<p>Program Organized:</p>	<ul style="list-style-type: none"> • Invited talk. “Strategic Planning for Teaching and Research” by Dr. R. N. Singh, Professor of Physics, Sultan Qaboos University, Muscat, 123 Sultanate of Oman on 21st August 2013 in the University Auditorium • Visit of delegation from Yunnan Open University (YU) China at Central University of Jharkhand, Brambe campus for Signing of Agreement of Cooperation and unveiling of the plaque for the YU and CUJ International Exchange and Learning Center on 4th July 2013 • As the convener of Popular Lecture Series, Organized Inaugural Lecture “Relevance of Humanities in the Age of Science and Technology” by Prof. Bhim Singh Dahiya, Former Vice-Chancellor, Kurukshetra University & Member, Academic Council, Central University of Jharkhand at Central University of Jharkhand on 19th August 2013 in the University Auditorium. • As the convener of Popular Lecture Series, Organized Lecture “Introduction to Skin & Hair care” by Dr. Ravishankar Dwivedi, MD (Skin), KEM Hospital, Mumbai, Consultant Dermatologist and Hair Transplant Surgeon on 21 Nov 2013. in the University Auditorium. • Demo show/ stage show of physics experiments for undergraduate and Post graduate students of Prof. M. S. Marwaha, Retd. Principal, Sri Guru Gobind Singh College, Chandigarh to explain the importance of Hands-on activities in teaching and learning Physics concepts. Was arranged on 5th April 2016 at 1.30 p.m in the University auditorium. • Observance of Vigilance Awareness Week 2016 from 31st October to 5th November 2016 as CVO and the Chairman of the organizing committee • Organized National Conference on Nuclear and Radiation Physics (NCNAP-2016) during 4-6, Oct. 2016 in the University Campus as Chairman. • Chairman of the committee constituted for observance of vigilance Awareness week during 30 Oct to 4th Nov. 2017 as CVO and the Chairman of the organizing committee

- Organized (as Petron and Chairman) International Conference on Nuclear, Particle and Accelerator Physics (ICNPAP-2018) at Centre for Applied Physics, Central University of Jharkhand, Brambe, Ranchi held during October 23rd - 26th , 2018
- Organized (as President, IIC) Half day workshop held on Intellectual Property Rights entitled “Strategies for Patents” on 14th Feb 2019 at CUJ campus.
- Organized (as Convener, Popular lecture committee) a talk on “Beauty and Fun in Mathematics and Suggested ways for Happy Living and Good Learning and India’s Contribution to the world” on 4th July 2018 by Prof. Jai Prakash, Department of Mathematics Botswana University, Botswana
- Organized (as Convener, Popular lecture committee) a talk of Prof. Ahin Nag, Department of Chemistry IIT Kharagpur on “Greener Chemistry for Future Generation” and “Grignard protocols for synthesis of biological and pharmaceutical compounds” on 19th July 2018.
- Organized (as Convener, Popular lecture committee) a talk of Shree Indresh Kumar, Expert on International Relations on “Tibet in Indian Cultural Values”
- Organized (as Convener, Popular lecture committee) a talk of Prof. G. D. Yadav , Vice Chancellor, LCT Mumbai on” Research Innovation and IPR” on 8th October 2018
- Organized (as Convener, Popular lecture committee) a talk of M. K Raina, eminent theatre personality and Sangeet Natak Akademi Awardee on Jan 2019
- Organized (as Convener, Popular lecture committee) a talk of Vice Admiral Shree Shekhar Sinha on “Leadership and Development” on 6th February, 2019.
- Organized (as Convener, Popular lecture committee) a talk of Dr. Srivari Chandrasekhar, Director, CSIR-IICT, Hyderabad on science technology and its relation with society titled “Molecules with Celebrity Status in Human Wellbeing” on 25th March, 2019.
- Organized (as Convener, Popular lecture committee) a talk on “TRANSPARENCY AND GOVERNANCE” on 23rd Sept 2019 by Shri Pankaj K P Shreyaskar, civil servant.
- Organized, National Science Day (NSD)-2021 on “The Science We Live By An Inclusive Principle” held on 28 February 2021 organized by Department of Physics, Central University of Jharkhand.

	<ul style="list-style-type: none"> • Organized, 5days online Faculty Development Program sponsored by AICTE Training and Learning (ATAL) Academy and organized by Department of Physics, Central University of Jharkhand during 18-22 Jan 2021. • Organized, online Faculty Development Program on “Quest Abound with Radiation Around: A Webinar on Cross Disciplinary Endeavours in Radiation Science held during 7-11 December 2020 organized by Department of Physics, Central University of Jharkhand • Chairman, Consultative Workshop with the Stakeholders to Obtain Feedback/ Suggestions on Research and Development in Higher Education Institutions (HEIs) held on 12 Nov. 2021. • Organizing committee member of National Webinar On “Research Opportunities Over the Horizon in Physical Sciences” organized by Department of Physics, Central University of Jharkhand in Collaboration with Indian Association of Physics Teachers (IAPT), RC-20 on 2nd October 2021 • Chairman, Online Lecture Series on Advances in Physical Sciences Organized by Department of Physics, Central University of Jharkhand during 9th– 13th August 2021 • Chairman, National Science Day (NSD)-2022 “Sustainable Energy and Society” organized on 28 Feb 2022 by the Department of Physics, Central University of Jharkhand • One week Orientation Program in Natural Sciences for Teachers of Senior Secondary Schools (OPNST-2022) 25th-30th April, 2022 Organized by Department of Physics, Central University of Jharkhand, Cheri-Manatu, Kamre, Kanke, Ranchi, Jharkhand-835222
<p>Any other information:</p>	<p>Fellowships/scholarships/memberships/selection etc.</p> <ol style="list-style-type: none"> 1. Selected and participated in 3 week Leadership for Academicians Program (LEAP) of Ministry of Human resource and Development (MHRD), Govt. of India organized by Indian Institute of Technology, Banaras Hindu University (IIT, BHU) in collaboration with Penn State University, USA, which is a top ranked University in standard global rankings. The program was conducted from 25th February, 2019 to 9th March, 2019 at IIT (BHU), India and from 11th March, 2019 to 15th March, 2019 at Penn State University, USA. 2. Visiting Research Professor at University of Hartford CT, USA during 25th Dec. 2007 to 16th Jan. 2008 and 7th July 2008 to 12th Aug. 2008 for a collaborative research work to demonstrate the proof-of-concept (POC)

	<p>feasibility of All-Optical Passive Transistor (AOPT) proposed by me with my Ph. D. student Mr. Ram Krishna Sarkar.</p> <p>3. Life Member: Indian Association of Physics Teachers IAPT.</p> <p>4. Recipient of OPTEL fellowship for Ph D research work in the area of Fibre Optics (19910-1994).</p>
Updated as on	11 th April 2024