

Curriculum Vitae

Personal Details

Name: Dr. Dharendra Kumar
Designation: Assistant Professor (Physics)
Address: Department of Applied Science & Humanities
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Education

Name of the Class/Degree	Name of the Institute	Board/University	Year Admitted	Year Completed	Percentage/C GPA	Subjects
Ph.D.*	IIT Patna	IIT Patna	Aug 2011	March 2017	8.6	Applied Optics
M.Sc.**#	IIT Guwahati	IIT Guwahati	2009	2011	6.7	Physics
B.Sc.	Patna Science College, Patna	Patna University	2006	2009	70 %	Physics (Honors)
12 th	Sainik School Tilaiya, Koderma	CBSE	2001	2002	78.6 %	Maths, Phy, Chem, Eng, Comp Sc.
10 th	Sainik School Tilaiya, Koderma	CBSE	1999	2000	73 %	Maths, Science, Hindi, English, Social Science

***Ph.D. Thesis Title:** Investigations on recognition and security techniques for three-dimensional objects using digital holography.

****Master's Project Title:** Generation of helical light beam using liquid crystal spatial light modulator and its propagation through free space.

#Qualified NET-JRF in Physical Sciences in 2011.

Research Interest

Optically recording digital holograms of real 3D objects, numerical and optical processing of digital hologram, phase retrieval, 3D correlation, optical information security, digital holographic microscopy for detection of biological microorganism, and holographic display.

Experience

Position/ Designation	Name of Institution	From	To	Total		Grade Pay, Pay Level, Basic Pay
				Years	Months	
Assistant Professor	Nalanda College of Engineering, Chandi (Nalanda) Bihar	21/07/2022	till date	0	2	6000 (AGP), 15600-39100
Assistant Professor	Govt. Engineering College, Nawada (Bihar)	05/08/2019	20/07/2022	2	11	6000 (AGP), 15600-39100
Assistant Professor	Birla Institute of Technology Mesra, Ranchi (Jharkhand)	03/01/2018	02/08/2019	1	7	70000 /- (TEQIP-III, NPIU, MHRD)
Assistant Professor	Siddhant College of Engineering, Pune	03/07/2017	28/12/2017	0	5	7000 (AGP), 15600-39100

Achievements/ recognitions

1. Successfully completed all **8 modules** of **NITTT** in February 2021.
2. Successfully completed online STTP on **Induction Training Phase-II** organized by **NITTTR Bhopal** during 29-06-2020 to 10-07-2020.
3. Successfully completed online STTP on **Induction Training Phase-I** organized by **NITTTR Kolkata** during 03-02-2020 to 14-02-2020.
4. Completed **Faculty Summer Training Program on Advanced Pedagogies: Active Learning and Digital Tools** organized by KITE Centre, **IIT Hyderabad** during 10 – 14 June 2019.
5. Completed **FDP** organized by Teaching Learning Centre, **IIT Madras** during 31 Jan – 04 Feb 2018.
6. Received travel grant from **SERB, DST**, Government of India, to attend **Siegman International School on Lasers 2015, Amberg, Germany**.
7. Selected among **first 100 graduate students** from around the world to participate in the 2015 Siegman International School on Lasers, Amberg, Germany hosted by the Max Planck Institute for the Science of Light, Erlangen.
8. Participated in **SERB School on Modern Optics & Its Applications**, Nov. 30-Dec. 18, 2015, IIT Patna.
9. Received **Junior and Senior Research Fellowships** from the University Grants Commission, Government of India.
10. **President** of IIT Patna OSA Student Chapter (2015-2016).
11. Qualified **JEST 2011** (Rank: 267).
12. Qualified **JAM** (Joint Admission Test to M.Sc. in IITs) in 2009 (All India Rank: 232).
13. Selected among first 500 participants in **Science Olympiad 1999**.

Responsibilities Held

1. Controller of Examination, GEC Nawada, 2019-2021.
2. Professor-in-Charge, Library, GEC Nawada, 2019-2022.
3. Professor-in-Charge, Office, GEC Nawada, 2021-2022.

Master's Dissertation Supervised

1. Bivoo Kumar(IPH/10017/2014), "Optical encryption using polarized light and phase encoding" at Dept. of Physics, BIT Mesra, Ranchi, Jharkhand, in 2019.
2. Kaustav Kar (IPH/10005/2014), "Three-dimensional Information Authentication by digital hologram watermarking" at Dept. of Physics, BIT Mesra, Ranchi, Jharkhand, in 2019.

List of Publications**Peer-reviewed International Journals**

1. **D. Kumar** and N. K. Nishchal, "Synthesis and reconstruction of multi-plane phase-only Fresnel holograms, **Optik** 127, 12069-12077 (2016).
2. **D. Kumar** and N. K. Nishchal, "Three-dimensional object recognition using joint fractional Fourier transform correlators with the help of digital Fresnel holography," **Optik** 126, 2690-2695 (2015).
3. **D. Kumar** and N. K. Nishchal, "Recognition of three-dimensional objects using joint fractional correlator and nonlinear joint fractional correlator with the help of digital Fresnel holography: a comparative study," **Opt. Rev.** 22, 256-263 (2015).
4. S. K Rajput, **D. Kumar** and N. K. Nishchal, "Photon counting imaging and phase mask multiplexing for multiple images authentication and digital hologram security," **Appl. Opt.** 54, 1657-1666 (2015).
5. S. K Rajput, **D. Kumar** and N. K. Nishchal, "Photon counting imaging and polarized light encoding for secure image verification and hologram watermarking," **J. Opt.** 16, 125406 (2014).
6. **D. Kumar**, A. Das, and B. R. Boruah, "A simple experimental arrangement to generate optical vortex beams," **Rev. Sci. Instrum.** 84, 026103(2013).

Peer-reviewed National Journals

1. **D. Kumar** and N. K. Nishchal, "Watermarking of phase-only Fresnel hologram using symmetrical 3D modified Gerchberg-Saxton algorithm," **Asian Jour. Phys.** 24, 1425-1429 (2015).
2. **D. Kumar** and N. K. Nishchal, "Three-dimensional object recognition with joint fractional fourier transform correlator using digital Fresnel holography," **Asian Jour. Phys.** 23, 527-534 (2014).

Conference/Symposium Presentations

1. S. K Rajput, **D. Kumar** and N. K. Nishchal, "Asymmetric security system using photon counting imaging and phase-truncation approach," Symposium on Optics and Photonics based Technologies & Instruments for Civil Society (OPTICS-2016), Oct. 21, 2016, CSIR-CSIO, Chandigarh.

2. **D. Kumar** and N. K. Nishchal, "Digital holography for recognition and information security of three-dimensional objects," *Int'l. Confer. on Opto-Electronics and Applied Optics* (OPTRONIX-2016), Aug. 18-20, 2016, IEM Kolkata.
3. **D. Kumar** and N. K. Nishchal, "Three-dimensional object recognition using phase-only computer-generated Fresnel hologram," *Int'l. Confer. on Opto-Electronics and Applied Optics* (IEM OPTRONIX 2015), Dec 16-17, 2015, University of British Columbia, Vancouver, CANADA.
4. **D. Kumar** and N. K. Nishchal, "Phase-only Computer-Generated Fresnel Hologram Synthesis using a Symmetrical three-dimensional GS algorithm," *Siegman Int. School on Lasers*, Aug 2-7, 2015, Amberg, GERMANY.
5. **D. Kumar** and N. K. Nishchal, "Digital holography based 3D object recognition under varying light illumination using photon counting imaging," *Digital Holography and 3-D Imaging* (DH), May 24-28, 2015, Shanghai Institute of Optics and Fine Mechanics, Shanghai, CHINA (Paper ID: DTh1A.6).
6. **D. Kumar** and N. K. Nishchal, "Hologram watermarking with color image via phase multiplexing and photon counting imaging technique," *Int'l. Confer. on Optics and Photonics* (ICOP 2015), Feb 20-22, 2015, University of Calcutta.
7. **D. Kumar** and N. K. Nishchal, "Digital holography for three dimensional object recognition," *6th Bihar Science Conference*, Dec 23-25, 2014, Magadh Mahila College, Patna.
8. **D. Kumar** and N. K. Nishchal, "Performance enhancement of joint fractional correlator for digital holography based three-dimensional object recognition using wavelet filter," *Int'l. Confer. on Opto-Electronics and Applied Optics* (IEM OPTRONIX 2014), Dec 17-18, 2014, IEM Kolkata.
9. **D. Kumar** and N. K. Nishchal, "Digital holography based three dimensional object recognition using binary differential joint transform correlator," *12th Int'l. Confer. on Fiber Optics and Photonics* (PHOTONICS 2014), Dec 13-16, 2014, IIT Kharagpur.
10. **D. Kumar** and N. K. Nishchal, "Performance evaluation of nonlinear joint fractional correlator for three-dimensional objects recognition," *Confer. on Recent Trends in Information Optics & Quantum Optics* (IOQO-2014), Nov. 07-08, 2014, IIT Patna.
11. S. K Rajput, **D. Kumar** and N. K. Nishchal, "Hologram watermarking using phase-retrieval algorithm and photon counting imaging," *Confer. on Recent Trends in Information Optics & Quantum Optics* (IOQO-2014), Nov. 07-08, 2014, IIT Patna.
12. A. Fatima, I. Mehra, **D. Kumar**, and N. K. Nishchal, "Plasmonic based keys that uses exclusive OR logic operation," *COMSOL Conference 2014*, Nov. 13-14, 2014, Bangalore.
13. **D. Kumar** and N. K. Nishchal, "Identification of three-dimensional objects using nonlinear joint fractional Fourier transform correlator," *16th Confer. of Int'l. Academy of Physical Sciences on Physical Sciences & Technology for Sustainable Development* (CONIAPS-2014), March 20-22, 2014, IIITDM Jabalpur.
14. **D. Kumar** and N. K. Nishchal, "Identification of three-dimensional objects using nonconventional joint fractional Fourier transform correlator," *Int'l Confer. on Optics and Optoelectronics* (ICOL-2014), March 05-08, 2014, IRDE Dehradun.

15. **D. Kumar** and N. K. Nishchal, "Characterization of HOLOEYE LC2002 spatial light modulator using He-Ne laser," *Proc. of Nat'l. Confer. on Advances in Lasers and Spectroscopy* (ALS-2012), Eds., V. K. Rai, P. Mishra, and K. Kumar, pp. 44-47, Nov. 01-03, 2012, ISM Dhanbad.

Referees:

Name of Referee	Designation	Office Address	Email	Telephone/Mobile No.	Professional Relationship
Dr. Naveen K. Nishchal	Professor	Block 4, Dept. of Physics, IIT Patna, Bihta, Patna- 801103, Bihar	nkn@iitp.ac.in	0612-3028027	Ph.D. Thesis Supervisor
Dr. Manoranjan Kar	Associate Professor	Block 4, Dept. of Physics, IIT Patna, Bihta, Patna- 801103, Bihar	mano@iitp.ac.in	0612-3028007	Doctoral committee Chairman
Dr. Bosanta R Boruah	Professor	Room No. 7, Dept. of Physics, IIT Guwahati- 781039 Assam	brboruah@iitg.ac.in	0361-2582725	Masters Project Supervisor