CURRICULUM VITAE

Maruthi Manoj Brundavanam

Assistant Professor
Department of Physics
Indian Institute of Technology Kharagpur
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Research Experience

Assistant Professor at Department of Physics, Indian Institute of Technology Kharagpur from 22nd Aug, (2013 -)
Postdoctoral Researcher at Institute for Laser Science, The University of Electro-Communications, Tokyo, Japan (2012 - 2013)
UEC- Postdoctoral Fellow, The University of Electro Communications, Tokyo, Japan (2010 - 2012)

Education

Ph.D. (Physics) from University of Hyderabad, India (2010)
M.Sc. (Physics) from University of Hyderabad, India (2004)
B. Sc. (Maths, Physics, Chemistry) from Acharya Nagarjuna University, India (2002)

Current Research Interests

I am interested in the field of singular optics and its applications. Singular optics is the branch of optics which deals with the study of the optical fields with undefined phase (scalar) or polarization (vector). Our group is working on linear, nonlinear, scalar and vector singular optics. We are generating and characterizing the singular optical beams such as optical vortex (OV) beams with integer and fractional charge. We are also generating the polarization singularities based on crystal optics and studying their properties and usefulness for different applications such as optical trapping and optical communications. We are also using another class of optical fields with nested phase singularities, speckle patterns to recover the object information lying behind a birefringent scatterer. Our group is also interested in the generation and applications of filamentation using femtosecond laser.

Awards

- INSPIRE Faculty Award (2013)
- UEC Postdoctoral Fellowship (2010)
- Young Scientist Award from Dr. K. V. Rao scientific society (April, 2009)
- CSIR-UGC Fellowship Award (June, 2004)
- DVR Memorial Medal in Physics (B. Sc, 2002)

Professional Memberships

- Optical Society of America (OSA)
- Indian Laser Association (ILA)
- Optical Society of India (OSI)

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Academic Service

Working as a reviewer to OSA Journals

Book Chapter

"Transverse Polarization Structure of an Optical Vortex Beam around the Unfolding Point in a Birefringent Crystal" in Fringe 2013 (Springer, 2014)

Publications (International)

1. Rakesh Kumar Singh, Dinesh N. Naik, Hitoshi Itou, Maruthi M. Brundabanam, Yoko Miyamoto, and Mitsuo Takeda, "*Vectorial van Cittert-Zernike theorem based on spatial averaging: Experimental demonstrations*," Opt. Lett. **38**, 4809 (2013)
2. Dinesh N. Naik, Rakesh Kumar Singh, Hitoshi Itou, Maruthi M. Brundavanam, Yoko Miyamoto and Mitsuo Takeda, "*Single-shot interferometric polarimeter with an integrated calibration scheme*," Opt. Lett. **37**, 3282 (2012)
3. Maruthi M. Brundavanam, Yoko Miyamoto, Rakesh Kumar Singh, Dinesh N. Naik, Mitsuo Takeda and Ken'Ichi Nakagawa, "*Interferometer setup for the observation of polarization structure near the unfolding point of an optical vortex beam in a birefringent crystal*," Opt. Express **20**, 13573 (2012)
4. Maruthi M. Brundavanam, Nirmal K. Viswanathan and D. Narayana Rao, "*Effect of input spectrum on the spectral switch characteristics in a white-light Michelson interferometer*", J. Opt. Soc. Am. A **26**, 2592 (2009) (also appeared in Virtual Journal of Biomedical Optics)
5. Maruthi M. Brundavanam, Nirmal K. Viswanathan and D. Narayana Rao, *"Nano displacement measurement using spectral shifts in a white light interferometer"*, Appl. Opt. **47**, 6334 (2008)
6. Maruthi M. Brundavanam, Nirmal K. Viswanathan and Narayana Rao Desai, *"Spectral anomalies due to temporal correlations in a White-light interferometer"*, Opt. Lett. **32**, 2279 (2007)

Conference papers with review committee

1. Abhijit Roy, Rakesh K. Singh and Maruthi M. Brundavanam, " *Characterization of Memory Effect of Polarization Speckle from a Birefringent Scatterer*," International Conference on Opto-Electronics and Applied Optics (OPTRONIX-2016), 18-20 August, Kolkata, West Bengal, India (Accepted for Oral presentation).
2. Maruthi M. Brundavanam, Satyajit Maji and Abhijit Roy, "*Topological Transformations between Integer and Fractional Optical Vortex Beams*," Optical Manipulation Conference in Optics and Photonics International Congress, 18-20 May, Pacifico Yokohama, Yokohama, Japan.
3. Satyajit Maji, Abhijit Roy and Maruthi M. Brundavanam, "*Observation of Non-Canonical Vortices in Fractional Optical Vortex Beams*," Recent Advances in Optical Sciences-II, 6-7 May 2016, University of Hyderabad, Hyderabad, Telangana, India.

4. Chinmoy Biswas and Maruthi M. Brundavanam, "*Measurement of Group Delay from Spectral Modulations due to Femtosecond Filamentation in BK7*," Frontiers in Light-Matter Interaction, 4-5 March 2016, IIT Ropar, Rupnagar, Punjab, India.
5. Abhijit Roy, Satyajit Maji and Maruthi M. Brundavanam, "*Characterization of Fractional Optical Vortex Beams using an Astigmatic Lens*," Advances in Photonics, 13-14 November 2015, IIT Kharagpur, Kharagpur, West Bengal, India.
6. Maruthi M. Brundavanam, Yoko Miyamoto, Mitsuo Takeda and Ken'ichi Nakagawa, "*Transverse polarization structure of an optical vortex beam around the unfolding point in a birefringent crystal*," 7th International Workshop on Advanced Optical Imaging and Metrology-Fringe'13, 08-11 September 2013, Nürtingen, Germany.
7. Rakesh Kumar Singh, Dinesh N. Naik, Hitoshi Itou, Maruthi M. Brundavanam, Yoko Miyamoto, and Mitsuo Takeda, "*Relation between vectorial source structure and coherence-polarization of light*," (Accepted for Oral presentation in SPIE Optical Metrology, 13 - 16 May 2013, Munich, Germany).
8. Maruthi M. Brundavanam, Yoko Miyamoto, Rakesh Kumar Singh, Dinesh N. Naik, Mitsuo Takeda and Ken'ichi Nakagawa, "*Observation of spatial polarization structure near unfolding point of an optical vortex beam using a birefringent Mach-Zehnder interferometer*," Proc. SPIE **8480**, 848008 (2012).
9. Maruthi M. Brundavanam, Yoko Miyamoto, Rakesh Kumar Singh, Dinesh N. Naik, Mitsuo Takeda and Ken'ichi Nakagawa, "*Polarization structure near the unfolding point of an optical vortex beam in a birefringent crystal*," Optics and Photonics Japan, Osaka, Japan, November 28-30 (2011).
10. Maruthi M. Brundavanam, Nirmal K. Viswanathan, Y. Miyamoto and D. Narayana Rao, "*Spectral correlation of refocused collinear filaments using femtosecond Pulses,*" in Proceedings of the IQEC/CLEO Pacific Rim, (Optical Society of America), paper J393 (2011).
11. Maruthi M. Brundavanam, V. Praveen Kumar and D. Narayana Rao, "*Polarization dependant spectral characteristics due to a white-light filament in BK7 glass using femtosecond pulses,*" Proc. SPIE **8173**, 81730P (2010).
12. K.S. Alee, Maruthi M. Brundavanam, S.N.B. Bhaktha, A. Chiappini, M. Ferrari and D. Narayana Rao, "*Effect of dye on the band gap of 3D polystyrene photonic crystals,*" Proc. Of SPIE, **7212**, 72120R-1 (2009).
13. Maruthi M. Brundavanam, Nirmal K. Viswanathan and D. Narayana Rao "*Wave front dislocations due to multiple filaments in a transparent medium using a femtosecond laser,*" National Laser Symposium-08, LASTEC, Delhi, India, January 7-10 (2009).
14. Maruthi M. Brundavanam, Nirmal K. Viswanathan and D. Narayana Rao, "*Effect of lamp spectrum on spectral shifts and switches in a white light interferometer,*" International conference on Fiber optics and Photonics-Photonics2008, IIT Delhi, Delhi, India, December 13-17 (2008).
15. Maruthi M. Brundavanam, Gopal K. Inavalli and Nirmal K. Viswanathan,*"Optical line singularity due to modal interference in tip modified optical fiber,"* International conference on Fiber optics and Photonics-Photonics2008, IIT Delhi, Delhi, India, December 13-17 (2008).
16. K.S.Alee, Maruthi M. Brundavanam, S.N.B. Bhaktha,A.Chiappini,M. Ferrari and D. Narayana Rao,*"Rhodamine B doped 3D polystyrene photonic crystals,"* International conference on Fiber optics and Photonics-Photonics2008, IIT Delhi, Delhi, India, December 13-17 (2008).
17. Maruthi M. Brundavanam, Nirmal K. Viswanathan and D. Narayana Rao," A novel method to measure the nano displacement using spectral interferometery",

National conference on Advances in Sensors for Aerospace Applications - SENSORS 2007, Research Center Imarat, Hyderabad, December 14-15 (2007).

18. Maruthi M. Brundavanam, Kalyan C. Rao, K. C. Vishnubhatla, Nirmal K. Viswanathan and D. Narayana Rao, *"Effect of dispersion on spectral changes in white light interferometry,"* Eighth International Conference on Optoelectronics, Fiber optics and Photonics – Photonics-2006, University of Hyderabad, Hyderabad, India, December 13-16 (2006).