



Dr. Ram Soorat

Curriculum Vitæ (November 30, 2020)

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Nationality: Indian

1 Research interest

Quantum optics, Quantum information, Quantum cryptography, Quantum Teleportation, Quantum error correction, Optical communication, Quantum random number generators.

2 Experience

1. **AiFi Technologies LLC**, Abu Dhabi, UAE.
Past Status: Chief Scientist: Quantum Information (18 March 2019- 18 Aug 2020).
Topic: Quantum Technology.
2. **Indian Institute of Technology**, Delhi, India.
Past Status: Research Associates (21 May 2018 to 11 March 2019).
Topic: Differential Phase Shift Quantum key Distribution.
Post-doc supervisor: Dr. Bhaskar Kanseri
3. **Indian Statistical Institute**, Kolkata, W.B, India.
Past Status: Visiting Scientist (3 July 2017 to 20 May, 2018)
Topic: Quantum Entanglement and Error Correction.
Post-doc supervisor: Prof: Goutam Paul
4. **Shiv Nadar University**, Noida, U.P, India
Past Status: Research Associates (15 October 2015 to 14 April 2017)
Topic: Mono-mode and Multimode Phase Sensitive Amplification
Post-doc supervisor: Prof. Rupamanjari Ghosh
5. **Visiting Scientist:** CNRS Laboratoire Aimé Cotton, Université Paris Sud 11, Campus d'Orsay, France, 15 May to 15 June, 2016.

3 Education

1. **University of Hyderabad**, Telangana State, India
Ph.D., **Physics**, 2008-2015,
2. Thesis Topic: *Noise Tolerance and Characterization of Free Space Polarization Shift Keying*
3. Advisor: **Dr. Ashok Vudayagiri**
4. Pre Ph.D Course
 - Advanced Quantum Mechanics

- Advanced Classical Mechanics
- Advances Electromagnetic Theory
- Advanced Statistical Mechanics

5. **Dr. R M L avadh University Faizabad**, U.P, India

M.Sc., [Physics](#) 2004-2006

B.Sc., [Physics](#), [Mathematics](#) 2001-2004

4 Experimental skills

1. Good experience on optical source like LED, Ti-sapphire laser, diode laser (edge emitting and VCSEL (vertical cavity surface emitting laser)).
2. Optical instruments like mirror, Beam splitter, lens, wave plate, fiber etc.
3. Optical detector photo-diode, APD (avalanche photo-diode), SPCM, Optical spectrum analyser, Polarimeter, ultra-fast detector.
4. GUI (graphical user interface) based software labVIEW for interface to electronic devices.
5. Building and debugging of Electronic circuits.
6. Working experience on mechanical instruments like lathe machine, drill machine etc.

5 Computer skills

1. Mathematica, labVIEW.
2. Windows, Linux.
3. GIMP, Origin.
4. MS office, latex.

6 Refereed Journal Publications

1. **R. Soorat**, S. Nitharshini, M. Anil Kumar and S. K. Singh, Nonclassical photon statistics and bipartite Entanglement generation of excited coherent states, *Quantum Information Processing*, 19(9), 2020.
2. Sajeev D, **Ram Soorat**, Ashok Vudayagiri "Long-time dynamics of a vertical-cavity surface-emitting laser under optical feedback, *Pramana – J. Phys* 2019, Volume 92, Issue 4.
3. **Ram Soorat**, Ashok Vudayagiri, Complete LabVIEW Code for Polarization Shift Keying and Error Correction, *IJSRR* 2018, 7(2), 508-524, ISSN: 2279-0543.
4. **Ram Soorat**, K madhuri and Ashok Vudayagiri,"Random number Generator for cryptography" *NANOSYSTEMS: PHYSICS, CHEMISTRY, MATHEMATICS*, 2017, 8 (5), P. 600-605
5. **Ram Soorat**, Ashok Vudayagiri, "Atmospheric effects on Quaternary polarization encoding for free space communication", *Optik* 127 (2016) 7578-7585.
6. **Ram Soorat**, Ashok Vudayagiri, Noise Characterization in Free Space Polarization Modulation communication Using Simulated Atmospheric Conditions in Laboratory, *International Journal of Engineering and Technical Research (IJETR)*, ISSN: 2321-0869, Volume-2, Issue-9, September 2014.

7 Submitted Journal Publications

1. Ram Soorat and S. K. Singh, Optical feedback induced dynamics and nonclassical photon statistics of semiconductor microcavity laser, JQE-IEEE.
2. Pritam Chattopdhayay, Ayan Mitra, Goutam K. Paul, **Ram Soorat**, Affect of Simulated Atmospheric Turbulence on Three Entangled Photons, [arXiv:1805.12269](https://arxiv.org/abs/1805.12269) Submitted in "Scientific Reports".
3. Shashanka B, Gautam Paul, **Ram Soorat**, Experimental scheme of five qubit graph state error correction code, Submitted to Scientific report.

8 Papers in Preparation

1. **Ram Soorat**, Ashok Vudayagiri, "A True Random Number Generator using External Feedback in VCSEL" to be communicate to josa A.
2. **Ram Soorat**, Subhayan Roy Moulick, Prasanta K. Panigrahi "Experimental realization of Signing Perfect Currency Bonds". to be communicate to optics letters.

9 Conference Paper

1. Sajeev D, Jijo P. Ulahannan, **Ram Soorat**, Effectiveness of Concatenated Dynamical Decoupling for Polarization Decoherence in Optical Qubits, [OSA](#), ISBN: 978-1-943580-22-4, 2016.
2. Sajeev D, **Ram Soorat**, Ashok Vudayagiri, Feedback Induced Correlation Analysis on a VCSEL, [OSA](#), ISBN: 978-1-943580-22-4, 2016.
3. J. Lugani, C. Banerjee, M-A Maynard, P. Neveu, **Ram Soorat**, R. Ghosh, E. Brion, F. Bretenaker, and F. Goldfarb , "Phase Sensitive Amplification in Metastable Helium at Room Temperature" [CELO](#), ISBN: 978-1-943580-11-8, 2016.
4. **Ram Soorat**, Ashok Vudayagiri, "Polarization Shift Keying for Free Space QKD: Effect of Noise on Reliability of the QKD Protocols", , [OSA](#), ISBN: 978-1-55752-959-0/13, 2012.

10 Oral Presentations

1. As a resource person, Quantum Random Bits Generator, International webinar on Quantum Cryptography, Department of Physics, Government College Kariavattom, Thiruvananthapuram, Kerala, August 1, 2020.
2. Experimental Realization of Signing Perfect Currency Bonds. Light-matter interactions and their applications, IISER Kolkata, July 12-13, 2015.
3. Study of Noise Correlation in Polarized Light Using Liquid Crystal, IONS-IIT Delhi, December 1-2, 2011.

11 Poster Presentation

1. Sajeev D, Jijo P. Ulahannan, **Ram Soorat**, Effectiveness of Concatenated Dynamical Decoupling for Polarization Decoherence in Optical Qubits, Photonics, IITK, December 4-8, 2016.
2. Sajeev D, **Ram Soorat**, Ashok Vudayagiri, Feedback Induced Correlation Analysis on a VCSEL, Photonics, IITK, December 4-8, 2016.
3. **Ram Soorat** and Ashok vudayagiri, Polarization shift keying: Towards quantum key distribution, International conference on Quantum information and Quantum Computing, IISc Bangalore, January 7-11, 2013.

4. **Ram Soorat**, Ashok vudayagiri, Polarization Shift Keying for Free Space QKD: Effect of Noise on Reliability of the QKD Protocols, International Conference on Fiber Optics and Photonics, Indian Institute of Technology Madras, India, December 9-12, 2012.
5. **Ram Soorat**, Balaji Yendeti, Ashok Vudayagiri, Polarization Shift Keying, poster at xxxvi OSI symposium, IIT Delhi, December 3-5, 2011.
6. **Ram Soorat**, Balaji Yendeti, Ashok Vudayagiri, Study of Soise Correlation in Polarized Light Using Liquid Crystal, IONS-IIT Delhi, December 1-2, 2011.
7. **Ram Soorat**, Ashok Vudayagiri, Noise Fluctuation in Optical Signal, Workshop on Physics at Small Scales, October 28, 2011.
8. **Ram Soorat**, Ashok Vudayagiri, Laser Diode and Photodiode Characterization for Cryptography, Workshop on Physics at Small Scales, University of Hyderabad, March 18-19 , 2011.
9. **Ram Soorat**, Ashok Vudayagiri, Laser Diode Characterization for Cryptography, NLS-19, RRCAT Indore, December 1-4, 2010.

12 Schools/conference attended

1. National Workshop on Quantum Information and Information Security, IIIT-Hyderabad, 05-11 October 2018.
2. Workshop on Application of Probability and Statistics in Cryptology and Security, Indian Statistical Institute, Kolkata, India, 14-15 February 2018.
3. International Symposium on New Frontiers in Quantum Correlations (ISNFQC18), S. N. Bose National Centre for Basic Sciences, Kolkata, India January 29 to February 2, 2018.
4. Indocrypt 2017, Institute of Mathematical Science, Chennai, India, December 10-13, 2017.
5. Mini Winter School on Quantum Information and Computation, Indian Institute of Science, Bangalore, India, January 03-05, 2013.
6. International Workshop on Quantum Information, HRI Allahabad February 20-26, 2012.
7. Indo-Brazil Workshop on Cold Atoms, Mesoscopic Phenomena and Quantum Information Processes, Hyderabad, India, October 16-18, 2010.

13 Teaching Experience

Teaching Assistant, School of Physics, University of Hyderabad.

1. Electricity and magnetism Lab
Instructor: Dr. Ashok Vudayagiri, Jan-April, 2012.
2. Quantum mechanics II
Instructor: Prof. A.K Kapoor, July-Nov, 2011.
3. Quantum computing
Instructor: Prof. S. Chaturvedi, Jan-April, 2011.
4. Laser Physics Lab
Instructor: Prof. D.N Rao, July-Dec, 2010.
5. Opto-electronics
Instructor: Prof. N. K Viswanathana, Jan-June, 2010.
6. Classical Mechanics
Instructor: Dr. E Hari kumar, Aug-Nov 2009.
7. Waves Oscillation, sound & Light
Instructor: Prof. A.K Kapoor, Jan-April, 2009.

14 Activity

Optical society of America, Student member, 2010 to present.

Optical society of India, Student member, 2010 to present.

Indian laser association, 2010 to present.

15 Work style

1. Willing to perform basic work and move on to solve complex problem.
2. Able to learn new knowledge and adopt new environment quickly.
3. Strong independent work style.
4. Well organized and passionate.

16 References

Dr. Ashok Vudayagiri

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University of Hyderabad
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