

Swati

Doctoral Student
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Education

- (01.10.2018 – 31.01.2019) Visiting Research Student
Southern University of Science and Technology (SUSTech),
Shenzhen, PR China
- 01.08.2017 – 30.04.2018 Visiting Research Student
National Quantum Information Centre (KCIK),
Gdansk, Poland
- 15.03.2017 – 14.06.2017 Visiting Research Student
Quantum Information and Computation group,
Harish-Chandra Research Institute, Allahabad, India.
- 01.08.2014 – 31.07.2016 Master of Science in Applied Physics,
Amity Institute of Applied Sciences, Amity University, Noida, India.
(CGPA: 7.79 out of 10 (77.9%), First Class, GPA:4)
Master's thesis: “*Simultaneous measurability of the quadrature
operators of photonic fields*”
Guide: Prof. Arun Kumar Pati, Co-guide- Dr. Rohit Verma
- 01.08.2010 – 30.06.2013 Bachelor of Science (Hons) with Physics,
Bhaskaracharya College of Applied Sciences, University of Delhi,
New Delhi, India. (67.2%. First Class, GPA:4)

Research Interests

- 1. Quantum Metrology:** Investigating metrological usefulness of random quantum states with specific properties such their angular momenta being fixed or energy being fixed.
- 2. Foundations of quantum physics:** Investigating the notion of nonclassicality and elaborating the classical-quantum border.
- 3. Quantum resource theories and quantum thermodynamics:** Investigating the structure of general resource theories, advantages offered by them and in particular constructing various quantum resource theories. In particular, the role of coherence and entanglement in thermodynamics of small-scale systems.
- 4. Quantum error correction:** Characterization of quantum error correcting codes and resource identification.
- 5. Concentration of measure phenomenon and Levy's lemma:** Reduction of the computational complexity of computation of various entanglement measures and generalization of Levy's lemma to constrained Hilbert spaces.
- 6. Resource theory of indefinite causal order:** Development of a resource theory of indefinite causal order and the role of indefinite causal order in quantum battery charging.

Professional Experience

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| 01.08.2017 – 30.04.2018 | Visiting research student, National Quantum Information Centre (KCIK), Gdansk, Poland.

Advisor: dr. Michal Oszmaniec |
| 15.03.2017 – 14.06.2017 | Visiting student, Harish-Chandra Research Institute, Allahabad, India.

Advisor: Prof. Ujjwal Sen |
| 01.02.2016 – 14.08.2016 | Visiting student, Harish-Chandra Research Institute, Allahabad, India.

Advisor: Prof. Arun Kumar Pati |

18.05.2015 – 09.07.2015 Internship project at Bhabha Atomic Research Center, Trombay, Mumbai, India.

Advisor: Prof. Srikumar Ghorui

Professional Responsibilities

19.02.2013 **Coordinator**, A Seminar organized by Gandhi Study Circle, held at Bhaskaracharya College of Applied Sciences, University of Delhi, New Delhi, India.

01.03.2012 **Coordinator**, Annual sports meet, held at Bhaskaracharya College of Applied Sciences, University of Delhi, New Delhi, India.

25.09.2012 – 26.09.2012 **Key Organizer (Joint Secretary)**, the Departmental fest of physics society “Z GRAVITY”, held at Bhaskaracharya College of Applied Sciences, University of Delhi, New Delhi, India.

24.02.2012 **Coordinator**, A Seminar organized by Gandhi Study Circle, held at Bhaskaracharya College of Applied Sciences, University of Delhi, New Delhi, India.

List of Publications

Articles

1. K. Bu, **Swati**, U. Singh, and J. Wu, *Coherence breaking channels and coherence sudden death*, Phys. Rev. A **94**, 052335 (2016).

In preparation

1. Swati, Michal Oszmaniec, Metrological usefulness of random quantum states with bounded angular momenta
2. Swati, Uttam Singh, Oscar Dahlsten, Resource theory of intelligent power conditioning.

Conferences/Schools/Presentations

1. The 2nd Hong Kong-Shenzhen Workshop on Quantum Information Science, 26-29 November 2018, Shenzhen, China.

Poster presentation on “Resource Theory of Intelligent power Conditioning”.

2. Seminar on “Metrological usefulness of random states”, 28 March 2018, KCIK, Gdansk, Poland.

3. Attended the conference on Quantum foundations and beyond, 8-9 December 2017, Gdansk, Poland.

4. Quantum Optics IX, 17-23 Sep, 2017, Gdansk, Poland.

Poster presentation on “Coherence Sudden Death”.

5. Attended the Polish-Swedish weekend conference-Physics across the Baltic Sea, 2-4 September 2017, Gdansk, Poland.

6. International Summer School, July-2016, Department of Mathematics, Zhejiang University, Hangzhou, China.

Oral presentation on “*Exact uncertainty relations*”.

Visits

1. Prof. Junde Wu, Department of Mathematics, Zhejiang University, Hangzhou, China, July 2016.

Computer skills

- Programming languages: C++, Fortran, Mathematica, Matlab (Secured 3rd place in image processing (MATLAB) workshop conducted by Entrench Electronics)
- Markup languages: Latex
- Operating systems: Linux (Ubuntu), Windows (XP, 7, 8, 8.1, 10)

Extra Curricular activities

- Contributed in 2012 in NSS (National Service Scheme), the Ministry of Youth Affairs & Sports Govt. of India.
- Secured 2nd position in group dance competition as a part of an annual inter-college festival held at Bhaskaracharya College of Applied Sciences, University of Delhi, New Delhi, India.
- Attended and led a troop in Military Training Camp (MTC), held at Gurgaon, organized by Amity University.

Languages

Hindi (native) -Fluent

English -Fluent

French –Beginner

References

Prof. Ujjwal Sen

Associate Professor-G

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Allahabad 211 019, India

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Prof. Arun Kumar Pati

M.Sc. thesis supervisor

Professor-H

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Prof. dr hab. Michal Horodecki

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National Quantum Information Centre, Gdansk

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<http://www.kcik.ug.edu.pl/details.php?id=5>