

Makhtedar Sanjay Kumar

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M. Sanjay Kumar received his M. Sc. (1984) and Ph. D. (1989) in Physics from University of Hyderabad. He had been a post-doctoral fellow at University of Rochester, Institute of Mathematical Sciences, Chennai and Raman Research Institute, Bangalore. He joined the Satyendra Nath Bose National Centre for Basic Sciences as faculty in 1999.

- ▶ **Quantum Optics and Quantum Information: Issues relating to nonclassicality, nongaussianity and entanglement of quantum optical states**

Is the entanglement potential a good measure of nonclassicality?

There exists a proposal in the literature that the amount of entanglement of the output of a beam splitter when nonclassical light is input could be taken as a measure of the nonclassicality of the input light. However our recent study has shown that for a certain class of input states the entanglement of the beam splitter output shows a non-monotonic behaviour as a function of the input nonclassicality as measured by well-known standard measures. Thus our work calls in question the reasonableness of using the beam splitter output entanglement as a measure of input nonclassicality.

| Future Plan

Continue work on the above-mentioned problems.

| Supervision of Students

Ph.D. Student: Soumyakanti Bose; **Project Students:** Summer Project of IPhD students (June-July 2015): (1) Mr. Arunava Adak titled 'Exponential Decay and the Quantum Zeno Effect', and (2) Mr. Balwant Singh titled 'Gaussian States in Quantum Optics'; Third Semester Project of IPhD students (August-November 2015): (1) Mr. Debsuvra Mukhopadhyay titled 'Separability Criteria for Gaussian two-mode States', and (2) Mr. Balwant Singh titled 'Quantum State Tomography'; Fourth Semester Project of IPhD students (January-April 2016): (1) Mr. Debsuvra Mukhopadhyay titled 'Continuous Variable Nonlocality and Quantum Communication', and (2) Mr. Balwant Singh titled 'Coherent and Squeezed States of Spin'

| Course Taught

1. Quantum Optics (officially called Optical Physics) IPhD course (January-April 2016) (Advanced/Elective)

| Membership of Committees

Internal Committee: Member, Admissions Committee; Admissions Coordinator; Member, EVLP (VASP) Committee