

Quantum Metrology

“ We study the fundamentals of quantum mechanics especially the quantum measurement problem. Research work is applied to design ultra precise sensors based on quantum mechanics ”

Areas of Interest: Quantum optics, Quantum metrology and hybrid quantum systems

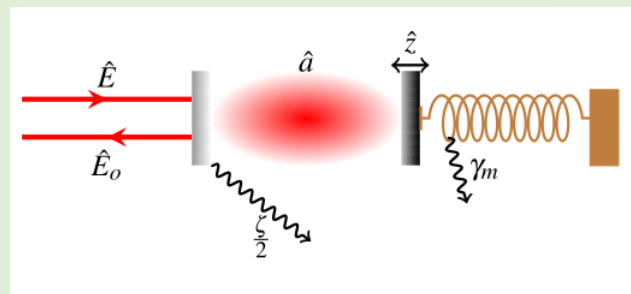
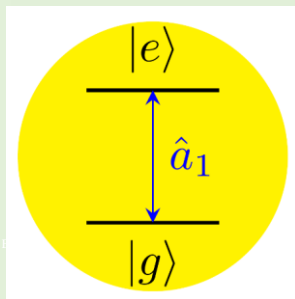
Group Lead:

Dr. Subrahmanya Bhima Sankar Davuluri

Phd Students:

Greeshma Gopinath,
Sreeshna S

Fundamentals of quantum mechanics, one of the most successful theory in the human history, still remain as intriguing as they were a century ago. In fact, the best we can say is to reiterate Nobel Laureate Richard P Feynman's words "If you think you understand quantum mechanics, You don't understand quantum mechanics". My research group plays around these fundamentals to develop new quantum technologies while trying to understand quantum fundamentals.



Current group activities

- Study of optomechanical interferometer to break the standard quantum limit (Dr. Sankar Davuluri)
- Study of atomic squeezing for precision measurements. (Greeshma Gopinath)
- Application of quantum correlations and optical restoring force to break the squeezed light interferometer limits (Sreeshna S)
- General quantum mechanical formulation of measuring process (Dr. Sankar Davuluri)
- Application of hybrid quantum systems for developing new quantum technologies (Dr. Sankar Davuluri)

Funding

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Research articles at BITS

Sankar Davuluri, Quantum optomechanics without radiation pressure noise, Optics Letters, 46,,904:907, 2021

Sankar Davuluri and Yong Li Quantum back-action nullifying meter, in submission (2021)

Sreeshna S, Sanket Das, Tarak Nath Dey, Sankar Davuluri, Enhanced Squeezed light optomechanical interferometer using optical restoring force, in preparation (2021)