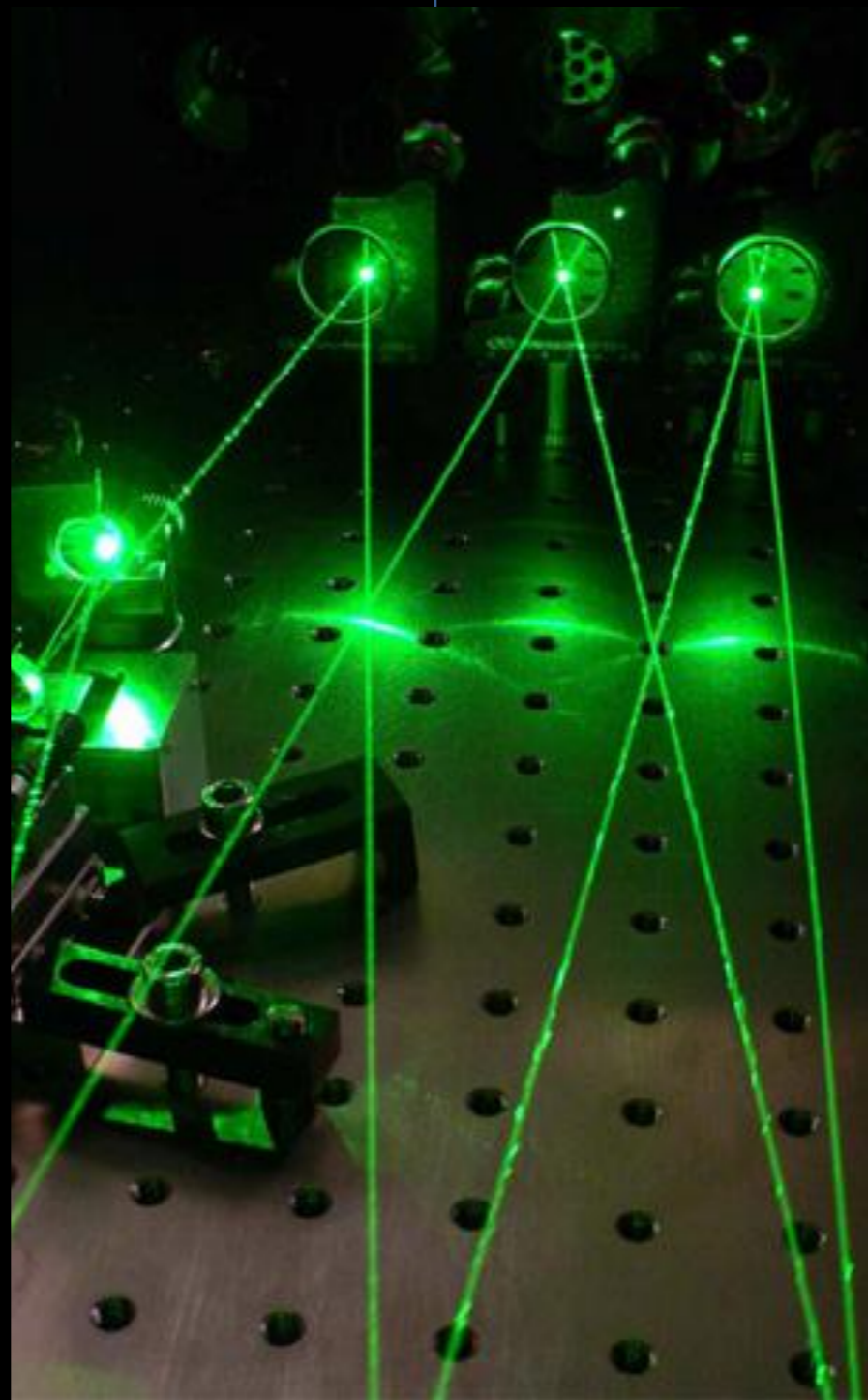


**Physics of a Two or Three Level Atom:  
An introduction to Quantum Optics  
by Dr. R. D'Souza, BARC**

Interference between alternative pathways in quantum-mechanical processes is an ubiquitous effect in physics. This interference is analogous to constructive and destructive interference between classical waves. However, whereas classical wave interference is accomplished by the superposition of field amplitudes, we must invoke intuitively less definite quantities, such as probability amplitudes, to explain interference phenomena in the quantum case. The concepts of atomic coherence and interference have led to some surprising observations of novel phenomena such as Rabi oscillations, self-induced transparency, and electromagnetic induced transparency.

This seminar is primarily intended to introduce the fascinating subject of quantum optics to undergraduate students. Using elementary knowledge of quantum mechanics and optics, the talk will attempt to provide a physical picture of some of the aforementioned effects.

**TUESDAY COLLOQUIUM**

Dr Richard D'Souza obtained his M.Sc. (Physics) in 1975 and M.Tech. (Material Science) in 1978 from IIT, Bombay, Mumbai. Thereafter he joined the BARC Training School from where he obtained his Ph.D. in 1989.

He has a vast teaching experience of graduate level courses in quantum mechanics & atomic and molecular physics for the past several years.

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**Tuesday, November 9, 2010 at 4.30 p.m**  
**Seminar Room (PF AG 14), Prefabs**  
**Near Annabhau Sathe Bhavan**  
**University of Mumbai**  
**Vidyanagari Campus, Kalina**  
**Mumbai 400098**

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