

Courses of potential interest: Quantum Optics I, Physics 566

Ivan Deutsch <ideutsch@unm.edu>

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Dear All,

I would like to bring to your attention courses in Quantum Optics offered this academic year.

Quantum optics is a broad and varied subject that deals with the study, control, and manipulation of quantum coherence associated with electromagnetic fields. This includes the basic interaction of photons and matter and the nonclassical nature of the electromagnetic field itself.

Quantum optics is the natural arena for experimental tests of the foundations of quantum mechanics and measurement, especially in the context of open, nonequilibrium quantum systems. The theoretical and experimental tools of quantum optics have helped to ignite the “second quantum revolution” and the development of Quantum Information Science (QIS), with applications in quantum computation and communication.

This class is the first in a two-semester sequence. Over the course of the year, topics to be studied include:

- Quantum and classical coherence
- Atom-photon coupling and atomic coherence
- The quantum electromagnetic vacuum
- Nonclassical light and photon statistics
- Quantum optical particles and waves (discrete and continuous variables)
- Foundations of entanglement and quantum maps
- Open quantum systems and decoherence
- Quantum trajectories and continuous measurement
- Fundamental paradigms in quantum optics (cavity QED, ion and neutral atom traps, entangled light)
- Applications in quantum information science (quantum communication, computation, metrology)

Fall Semester

Physics 566 : Quantum Optics I

Time: Tuesday & Thursday, 9:30-10:45am

In Person: PAIS Room 1140

Class Website: <http://info.phys.unm.edu/~ideutsch/Classes/Phys566F21/>

Best,

ID

Ivan Deutsch

Regents' Professor of Physics and Astronomy

Director, Center for Quantum Information and Control

University of New Mexico

CQuIC: Center for Quantum Information and Control

Department of Physics and Astronomy

MSC07 4220

Albuquerque, New Mexico 87131-0001

email: ideutsch@unm.edu

Phone: (505)-277-8602

FAX: (505)-277-1520

URL: <http://cquic.unm.edu>