

ICFO Colloquium IGNACIO CIRAC 'Quantum Optics with Emitters in Waveguides'

IGNACIO CIRAC

May 22, 2017

Monday, May 22 , 2017, 15:00. ICFO Auditorium

IGNACIO CIRAC

Director at the Max Planck Institute of Quantum Optics and head of the Theory Division

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Professor Ignacio Cirac is a world-expert in the field of quantum information and quantum computation. In 2005 he was awarded the "Quantum Electronics Prize" of the European Science Foundation. In May 2006 he was the youngest ever winner of the renowned Royal Spanish Prince of Asturias Prize, and in the same year he received the International Quantum Communication Award together with Professor Peter Zoller (University of Innsbruck). In 2009 he shared the "Frontiers of Knowledge Award in Basic Sciences" of the Spanish BBVA

Foundation as well as the Benjamin Franklin Medal of the Franklin Institute in Philadelphia (USA) with Professor Peter Zoller. In January 2013 he received both the Israeli Wolf Prize and the Niels Bohr Medal. In 2014, Prof. Cirac received the Honorary Doctor from the University of Zaragoza. In 2015 he got the Hamburg Prize for Theoretical Physics.
His main areas of research are the theoretical description of atomic systems interacting with light, as well as the development of a theory of Quantum Information. In those fields he has proposed several ways of constructing quantum computers, quantum simulators and quantum repeaters using ions, atoms and photons. He has also participated in the development of the theory of entanglement.

Recent progress in nano-fabrication and atomic physics allowes us to couple atoms (or other emitters) to structured waveguides. In this talk I will report on different opportunities that are opened up by those systems, including the observation of many-photon bound states, the preparation of Fock states, the simulation of long-range spin interacting models, or the observation of exotic features in collective decays.

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