



Atoms, Cavities and Photons

September 10-12, 2009
Collège de France
Amphitheater Halbwachs
Paris, France

Program

Thursday, September 10th

9h00- 9h15: Welcome address

9h15-12h45: **Session 1** “Cavity QED” (Chair: F. Schmidt-Kaler)

9h15-10h00: **C. Cohen-Tannoudji** *The dressed atom approach. From radio-frequency spectroscopy to cold atoms and cavity quantum electrodynamics.*

10h00-10h45: **D. Kleppner** *The Happy History of Cavity QED*

10h45-11h15: Coffee Break

11h15-12h00: **J.M. Raimond** *Exploring the quantum with atoms and cavities*

12h00-12h45: **A. Wallraff** *Exploring the Interactions of Microwave Photons and Superconducting Qubits in Circuit Quantum Electrodynamics*

14h30-18h00: **Session 2** “Cavity QED and Cold Atoms” (Chair: L. Moi)

14h30-15h15: **G. Rempe** *Cavity QED with trapped atoms and mobile photons*

15h15-16h00: **J. Reichel** *Miniaturizing optical cavity QED*

16h00-16h30: Coffee Break

16h30-17h15: **D. Meschede** *Playing quantum marbles, or can we make two individual atoms interfere with each other?*

Friday, September 11th

9h00-12h30: **Session 3** “Quantum Optics” (Chair M. Inguscio)

9h00- 9h45: **T. Hänsch** *The Heartbeat of Light*

9h45-10h30: **P. Grangier** *Blockade and entanglement using individually trapped Rydberg atoms*

10h30-11h00: Coffee Break

11h00-11h45: **A. Zeilinger** *Photonic Entanglement Fundamentals and Applications*

11h45-12h30: **E. Polzik** *Quantum state engineering of macro-atomic objects*

14h00-16h15: **Session 4** “Quantum Optics in Solids” (Chair A. Rauschenbeutel)

14h00-14h45: **Y. Yamamoto** *Bose-Einstein condensation of exciton-polaritons*

14h45-15h30: **J.M. Gérard** *Semi-conducting quantum boxes: CQED effects and applications*

15h30-16h15: **V. Sandoghdar** *On single emitters, photons, and plasmons: light confinement without cavities*

16h15-16h45: Coffee Break

16h45-18h15: **Session 5** “Trapped ions and quantum information” (Chair: E. Solano)

16h45-17h30: **D. Wineland** *Exploring the Jaynes-Cummings coupling between internal states of trapped atoms and their harmonic motion*

17h30-18h15: **R. Blatt** *Quantum information science with trapped Ca⁺ ions*

Saturday, September 12th

9h00-12h30: **Session 6** “Theoretical Quantum Optics” (Chair: N. Zagury)

9h00- 9h45: **R.J. Glauber** *Emission of a Single Quantum by Several Atoms.*

9h45-10h30: **P. Knight** *Entangling Atoms and Photons in Cavity QED.*

10h30-11h00: Coffee Break

11h00-11h45: **P. Zoller** *Opto-Nanomechanics and Atoms*

11h45-12h30: **L. Davidovich** *From quantum to classical: Schrödinger cats, entanglement, and decoherence*

12h30-12h45: Concluding Remarks (S. Haroche)

With the support of:

- Fondation Hugot du Collège de France
- Institut de France
- IP SCALA