

HKIAS 10th Anniversary Distinguished Lecture Series

The Laser and Quantum Physics

13 October 2025 (Monday)

10:30am-11:30am

(Light refreshment will be served from 10:00am-10:30am)

Senate Room, 19/F, Lau Ming Wai Academic Building,
City University of Hong Kong



Speaker:

Professor Serge Haroche

Chairman of HKIAS

Professor Emeritus at the Collège de France

Nobel Laureate in Physics (2012)

Abstract

This year marks the hundredth anniversary of quantum mechanics. Among all the inventions born of this physics, the laser occupies an important place, both for the rich history of discoveries that led to its birth, and for the role it plays today in fundamental and applied research. This history began at the time of the “old quantum theory” with Einstein’s discovery of stimulated emission in 1916 and Stern’s discovery of the spatial quantization of the atomic angular momentum in 1922. Nuclear magnetic resonance (1945), optical pumping (1952), atomic clocks and the maser (1954) followed, leading in 1960 to the invention of the laser. This extraordinary light source plays an essential role in many modern technologies. It has also opened up fields of research in blue sky science that could not have been imagined at the time of its birth. We owe to it the cooling and trapping of atoms, the study of quantum gases of bosons and fermions, the discovery of gravitational waves and the manipulation of individual quantum particles, which has led to current research into quantum simulation and quantum computing. The laser may also provide answers to fundamental questions about the link between quantum physics and gravitation, or about the nature of the hypothetical dark matter. The rich history of the laser is a vivid illustration of the close link between fundamental research and technology.

Biography

Serge Haroche, born in 1944, is Professor Emeritus at Collège de France and member of the French Academy of Sciences. He has graduated from Ecole Normale Supérieure, getting his PhD in physics in 1971. He has been Professor at Paris VI, now Sorbonne University (1975-2001) and Professor at Collège de France from 2001 to 2015 (President of the institution from 2012 to 2015). His research focuses on atomic physics and quantum information science. He has been a pioneer in Cavity Quantum Electrodynamics, the domain of quantum optics which studies the behavior of atoms interacting with the field confined in a box made of highly reflecting mirrors. Serge Haroche has received many prizes and awards, culminating with the Nobel Prize in physics in 2012.

Supported in part by: 光華教育基金會 Kwang Hua Educational Foundation

 34426611

 hkias@cityu.edu.hk

Registration:
<https://go.cityu.hk/pl4wku>

