

HKIAS Distinguished Lecture

Quantum Science with Rydberg Atoms

Professor Serge Haroche

Chairman, Hong Kong Institute for Advanced Study, CityU
Professor Emeritus, Collège de France
Nobel Prize Laureate
Member, French Academy of Sciences



Date : 15 May 2023 (Monday)

Time : 4:00pm – 5:00pm (*Light refreshments will be served from 3:30pm to 4:00pm*)

Venue : HKIAS Lecture Theatre

(LG/F, Academic Exchange Building, City University of Hong Kong)

Abstract

The exaggerated properties of Rydberg atoms (enormous sizes, very long life times) make them extremely sensitive to their environment. These giant atoms can now be prepared and manipulated by laser excitation with an exquisite precision. They interact very strongly with microwave photons and between each other, at distances which are huge at the atomic scale. These features make them ideal tools to explore fundamental quantum phenomena, to build quantum gates and to realize quantum simulators of condensed matter systems. I will recall the early history of Rydberg atom physics and describe recent studies in which arrays of Rydberg atoms are interacting with each other in a controlled way, opening promising perspectives in quantum information science.

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.



All are welcome

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

Online registration: www.hkias.cityu.edu.hk/en/event/upcoming

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