

6th Summer School on INtelligent signal processing for FrontIer Research and Industry



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QUANTUM TECHNOLOGIES FOR FUNDAMENTAL PHYSICS: THE SCIENCE AND THE TECHNOLOGY LANDSCAPE

Thursday, 2 September 2021 18:00 (2 hours)

CONVENER of THIS KEYNOTE SESSION: Dr. Aurore SAVOY-NAVARRO, CEA-IRFU, University Paris-Saclay and CNRS/IN2P3.

“QUANTUM SENSING” describes the use of a quantum system, quantum properties or quantum phenomena to perform a measurement of a physical quantity. Historical examples of quantum sensors include magnetometers or atomic clocks. More recently, quantum sensing has become a distinct and rapidly growing branch of research within the area of quantum science and technology, with the most common platforms being spin qubits, trapped ions and flux qubits. The field is expected to provide new opportunities –especially with regard to high sensitivity and precision –in applied physics and other areas of science.” (Cite from C. L. Degen, F. Reinhard, P. Cappellaro, in *ReV of Modern Physics*:10.1103/RevModPhys.89.035002)

Quantum sensing will be presented in this keynote session with its application to many key areas of the fundamental Physics (i.e particle physics, particle-astrophysics and cosmology).

This includes atom interferometry, but also other quantum sensing ways of searching for dark matter, neutrino mass, relic neutrinos, measuring fundamental constants, Electric Dipole Moments (EDMs), dark energy and the multiverse.

Ian Shipsey is the Henry Moseley Centenary Professor of Experimental Physics and Head of the Department of Physics. He is a Professorial Fellow at St. Catherine’s College.

Presenter: Prof. SHIPSEY, Ian (University of Oxford (GB), HEAD of the PHYSICS DEPARTMENT)