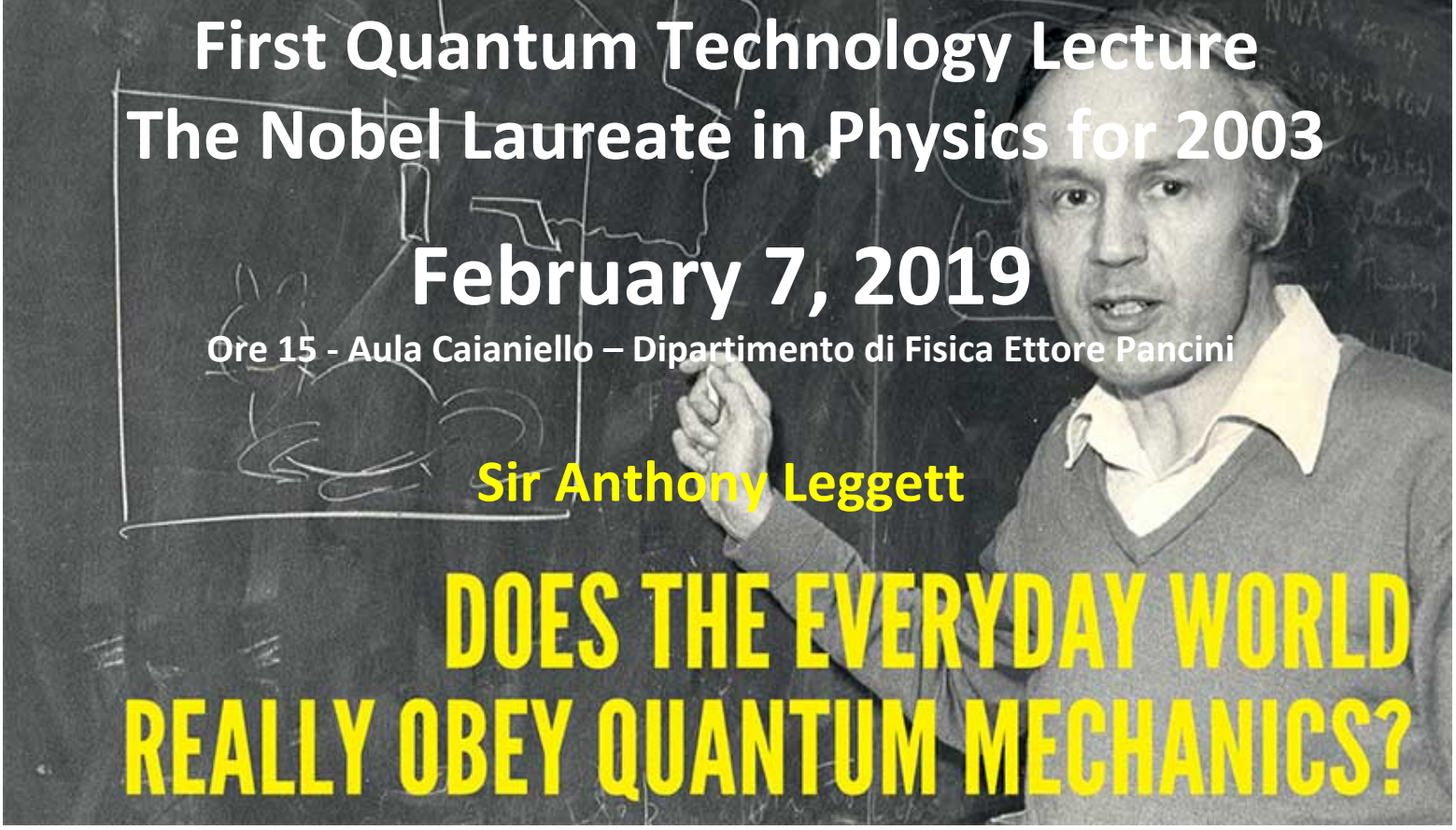

Sir Anthony J. Leggett has been a faculty member at Illinois since 1983. He is widely recognized as a world leader in the theory of low-temperature physics, and his pioneering work on superfluidity was recognized by the 2003 Nobel Prize in Physics. He was knighted (KBE) by Queen Elizabeth II in 2004 "for services to physics." Professor Leggett has shaped the theoretical understanding of normal and superfluid helium liquids and other strongly coupled superfluids. He set directions for research in the quantum physics of macroscopic dissipative systems and use of condensed systems to test the foundations of quantum mechanics with interest in the possibility of using special condensed-matter systems, such as Josephson devices, to test the validity of the extrapolation of the quantum formalism to the macroscopic level.

ABSTRACT

Quantum mechanics has been enormously successful in describing nature at the atomic level, and most physicists believe that it is in principle the "whole truth" about the world even at the everyday level. Such a view prima facie leads to a severe problem: in certain circumstances, the most natural interpretation of the theory implies that no definite outcome of an experiment occurs until the act of "observation". For many decades it was thought that it had no consequences which could be tested in experiment. However, in the last dozen or so years the situation has changed very dramatically in this respect. I will discuss the problem, some popular "resolutions" of it, the current experimental situation and prospects for the future.

The lecture will be proceeded by a short introduction to the new PhD program in Quantum Technologies

In 2019 the University Federico II has launched a new PhD program in Quantum Technologies in collaboration with the University of Camerino and CNR. This new program originates from the awareness of the need of an interdisciplinary background on Quantum Technologies. It will cover quantum computation, quantum networks and communication, quantum simulation, quantum sensors and metrology. http://www.fisica.unina.it/presentazione-dottorato-qt

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