ICFO COLLOQUIUM ANTONIO ACIN 'Algorithmic Randomness and Quantum Physics'

ANTONIO ACIN

January 22, 2018

Monday, January 22, 2018, 12:00. ICFO Auditorium

ANTONIO ACIN

Quantum Information Theory?s group

ICFO-Institute of Photonic Sciences$$ Antonio Acin is an ICREA Professor at ICFO. He got his PhD from University of Barcelona in 2001. After a post-doc in the group of Nicolas Gisin at the Group of Applied Physics, University of Geneva, he joined ICFO in 2003 where he leads the Quantum Information Theory group. Acin?s research group activity focuses on quantum information theory, with an emphasis on quantum communication and cryptography, but covers other areas such as quantum optics, foundations of quantum physics, condensed matter physics or quantum thermodynamics. Acin?s research has been awarded with 3

grants from the European Research Council (1 Starting, 1 Proof-of-Concept and 1 Consolidates grant) and an AXA Chair in Quantum Information Science.

Quantum foundations aims at a better understanding of quantum physics and its possible extensions. The field has experienced a growth in last years thanks to insights from quantum information theory. In the talk I will present the context, motivations and results of the article "Algorithmic Pseudorandomness in Quantum Setups", which was awarded The Paul Ehrenfest Best Paper Award for Quantum Foundations for 2016. Our main motivation was to consider a standard scenario in many experimental labs in which computers govern quantum systems. Computer science is the field that studies what computers can or cannot do. Our goal was to study how computer science laws affect the physics of these quantum setups. In particular, we studied the consequences of using pseudorandomness in places where the theory requires randomness and proved that this modifies standard textbook results of quantum theory.

Monday, January 22, 2018, 12:00. ICFO Auditorium