

SEMINARIO DIDATTICO-SCIENTIFICO

*God Plays Dice**Entanglement for Quantum Cryptography and Computing***Fabio Antonio Bovino**

(LEONARDO & Università di Roma La Sapienza)

Thursday February 23 17.30*AULA SEMINARI RM004 - Dip. SBAI**Via Scarpa 16 –ROMA*

Entanglement has always been a key issue in the foundation and interpretation of Quantum Mechanics, and it has always been considered a physical resource for quantum information processing. Here we extend the concept of entanglement to propose a novel architecture that provides deterministic universal logic gates, the building blocks for quantum processor engineering, and novel Quantum Cryptography schemes.

Fabio Antonio Bovino, was employed at Elsag, a Finmeccanica Company (now LEONARDO), in September 2001. He is the founder and the chief scientist of Quantum Optics Lab. He has participated to national and international research projects financed by MIUR, Italian Ministry of Defense and European Community. He is author of more than 90 publications in national/international journals and 12 granted patents in the fields of Foundation of Quantum Mechanics, Quantum Optics, Quantum Information and Computing. Highlights are the first demonstration of a quantum cloning machine (2001), the first experiment beyond Bell's Inequalities for entanglement characterization (2004), the realization of the first Quantum Cryptography Italian product: the Q-KeyMaker®. He was Lecturer at ICTP The Abdus Salam International Centre for Theoretical Physics and at Ettore Majorana Foundation and Centre for International Culture, where he was, in 2012, Director of course Advances in Nanophotonics. He is member of the teaching and scientific board of Second Level Master on Optics and Quantum Information - University of Rome "Sapienza". He was awarded in 2004 and 2012 with FINMECCANICA Innovation Prize, in 2005, 2006 with Elsag Innovation Prize and, in 2008, with Best Patent Prize, in 2010 with Selex-SI Innovation Prize. Currently, he is the Scientific Director of two research programs on quantum technologies financed by the Italian Ministry of Defence: QuCryptnet - Quantum Cryptography Network and Copernico: On Chip Quantum Information Processing .

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