School of Physical Sciences Seminar

Dr Emanuelle Pellucchi

Tyndal National Institute, University College Cork

Thursday 01 Dec 2016

Marconi Building, N115, 13:00

Title: *Quantum technologies at the Tyndall National Institute: entangled photon emission form site-controlled quantum dots.*

The Tyndall National Institute hosts a number of prominent experimental activities in the field of quantum information technologies. One of these is led by E. Pelucchi and his Epitaxy and Physics of Nanostructure group. His is the only experimental team in Ireland (at the moment) routinely performing cryogenic quantum optics experiments with "quantum" sources. The group has developed a full technology thread in house, starting from the epitaxy of single site-controlled quantum dots, their "quantum" characterization as, e.g., entangled photon emitters, to the development of single electrically pumped devices, which, as recently reported, allow Bell's inequalities violation. His research has been recently featured in Nature Photonics (http://www.nature.com/nphoton/journal/vaop/ncurrent/full/nphoton.2016.203.html)

Short Biographical note:

Emanuele started his PhD in 1997, working in the field of surface science and molecular beam epitaxy (MBE), at TASC National Laboratory, Trieste, Italy. His research covered MBE of II-VI materials on III-V substrates, photoemission applied to interface physics and metal-semiconductor Schottky barriers. He moved to Lausanne in 2001 as a research assistant (post-doc), in the group of Professor Eli Kapon and. participated to the development of the research concerning metalorganic vapour phase epitaxy (MOVPE) of site controlled III-V nanostructures, working on both V-groove quantum wires and Pyramidal QDs. In May 2006 Dr Pelucchi was awarded with a Science Foundation Ireland Principal Investigator Grant. In January 2007 moved to Tyndall National Institute-UCC, setting up a new research group in the field of III-V epitaxy and semiconductor quantum dots, with a particular effort dedicated to site controlled quantum dots. He is currently Head of Group at Tyndall National Institute-University College Cork and, jointly, Senior Research Fellow of the University Department of Physics.