UNIMORE
UNIVERSITÀ DEGLI STUDI DI
MODENA E REGGIO EMILIA

Venerdì 30.5.2025, alle ore 10:00-12:00
Nell'edificio MO25, Aula P1.1 del DIEF
il **Dr. Eng. Marco De Michielis,**
Istituto per la Microelettronica e Microsistemi (**IMM**),
Consiglio Nazionale delle Ricerche (**CNR**), Agrate Brianza (MB), Italy
terrà un seminario dal titolo

From Theory to Practice: An Introduction to Quantum Computing and CMOS-Based Qubits

nell'ambito dei corsi di **Laurea e Laurea Magistrale in Ingegneria Elettronica / Electronic Engineering** e del **Corso di Dottorato in ICT**

Tutti gli interessati sono invitati a partecipare

Abstract: Following a general introduction on the motivations behind the growing interest toward quantum technologies and quantum computing, the seminar will illustrate the fundamentals of the theory of quantum computation in terms accessible to the engineering community. A few qubit concepts and technologies currently under exploration will be compared. Among these, silicon qubits, amenable to fabrication in mainstream nanoelectronic CMOS technology will be described in more detail. The lecture will then address current efforts and challenges toward the design of a quantum computer architecture. An overview of the growing ecosystem of quantum computing start-ups and companies will close the seminar.

Marco De Michielis received his PhD in Electronic Engineering from the University of Udine (Italy) and INP Grenoble (France) in 2009.
From 2009 to 2010, he worked in the Department of Electronic Engineering at the University of Udine, where he developed multi-subband Monte Carlo simulators for ultra-scaled devices.
Since 2010, he is with the Institute for Microelectronics and Microsystems (IMM) of Consiglio Nazionale delle Ricerche (CNR), Italy, working on the modeling, simulation, and electrical characterization of low-dimensional devices for quantum computation.
He has participated in several Italian and European research projects focused on quantum computation and silicon-based quantum devices, also serving as principal investigator for CNR and work package leader.
He is the author and co-author of more than 50 scientific papers and conference proceedings in the fields of device simulation and quantum computation. His research interests include the modeling of semiconductor qubits, control sequence search algorithms, full-stack quantum computer simulation, and low-temperature electrical characterization of qubits.
Dr. De Michielis serves as a reviewer for Nature Communications, Scientific Reports, and IEEE Transactions on Electron Devices (IEEE-TED), and is a member of the IEEE-Standards Association (IEEE-SA).