



DEPARTMENT OF PHYSICAL SCIENCES  
AND TECHNOLOGIES OF MATTER

# SINGLE PHOTON DEVICES

## The italian perspective

ROMA, 21 APRILE 2017

CNR - P. le Aldo Moro, 7  
Sala Marconi

### Quantum Information Science (QIS)

Il Dipartimento di Scienze Fisiche e Tecnologie della Materia (DSFTM) del CNR organizza una giornata di confronto sulle attività italiane nel campo delle tecnologie quantistiche legate alla generazione ed alla rivelazione di singoli fotoni. L'obiettivo è quello di promuovere lo sviluppo di piattaforme tecnologiche nazionali che si inseriscano all'interno della prevista Flagship Europea.

### AGENDA

9:30 **C. Spinella**  
Direttore del Dipartimento Scienze Fisiche e Tecnologie della Materia del CNR

**Saluto di Benvenuto**

9:45 **F.S. Cataliotti**  
Esperto Italiano per le Quantum Technologies presso il Board of EU Funders

**Introduzione ai lavori**

#### SINGLE PHOTON SOURCES 1

- 10:00 **C. Toninelli** (CNR INO)  
**Molecule-based integrated single photon sources**
- 10:15 **D. Dequal** (ASI)  
**ASI expertise in Space Quantum communication**
- 10:30 **M. Galli** (Univ. Pavia)  
**Photon pair generation in integrated silicon microcavities**
- 10:45 **I. P. Degiovanni** (INRIM)  
**INRIM Single Photon sources and applications**
- 11:00 **M. Barbieri** (Univ. Roma Tre)  
**Simple diagnostics for spectral entanglement of photon pairs**

11:15 *COFFEE BREAK*

#### SINGLE PHOTON DETECTORS 1

- 11:45 **R. Leoni** (CNR IFN)  
**SNSPDs efficiently-coupled to photonic integrated circuits**
- 12:00 **R. Cristiano** (CNR SPIN)  
**Unconventional SNSPDs: beyond NbN for Quantum Communication & Technologies**
- 12:15 **M.G. Castellano** (CNR IFN)  
**KIDs - Kinetic Inductance Detectors**
- 12:30 **F. Giazotto** (CNR NANO)  
**Josephson radiation sensors via temperature-to-phase conversion**
- 12:45 **M. Rajteri** (INRIM)  
**Transition-Edge Sensors: not just single photon detectors**

13:00 *NETWORKING LUNCH*

#### SINGLE PHOTON SOURCES 2

- 14:15 **F. Sciarrino** (Univ. Roma La Sapienza)  
**Quantum simulation with integrated photonics**
- 14:30 **M. Bellini** (CNR INO)  
**Manipulating the shape of ultrashort single photons**
- 14:45 **P. Villoresi** (Univ. Padova)  
**Space Quantum Communications and Quantum Random Number Generators @ QuantumFuture in Padova**
- 15:00 **L. Seravalli** (CNR IMEM)  
**InAs/InGaAs metamorphic QDs as single photon sources in the telecom windows**
- 15:15 **S. Rubini** (CNR IOM)  
**Quantum dots in semiconductor nanowires: a strategy towards ordered arrays of single photon emitters**

15:30 *COFFEE BREAK*

#### SINGLE PHOTON DETECTORS 2

- 16:00 **F. Gatti** (Univ. Genova)  
**Single Photon Detectors in THz and X-Ray range**
- 16:15 **S. Lombardo** (CNR IMM)  
**Silicon Multipliers and SPADs: improvement of dark count rate and applications**
- 16:30 **P. Maccagnani** (CNR IMM)  
**Custom technology for high quality SPAD fabrication**
- 16:45 **A. Tosi** (Polimi-DEIB)  
**Single-Photon Avalanche Diodes for new Quantum Technologies**

17:00 *DISCUSSIONE*

Moderano **C. Spinella / F.S. Cataliotti / G.P. Pepe**

*CLOSING*