QUANTUM LAB

Quantum Information Lab
Dipartimento di Fisica, Università di Roma La Sapienza

SAPIENZA
UNIVERSITÀ DI ROMA

Advanced Quantum Information

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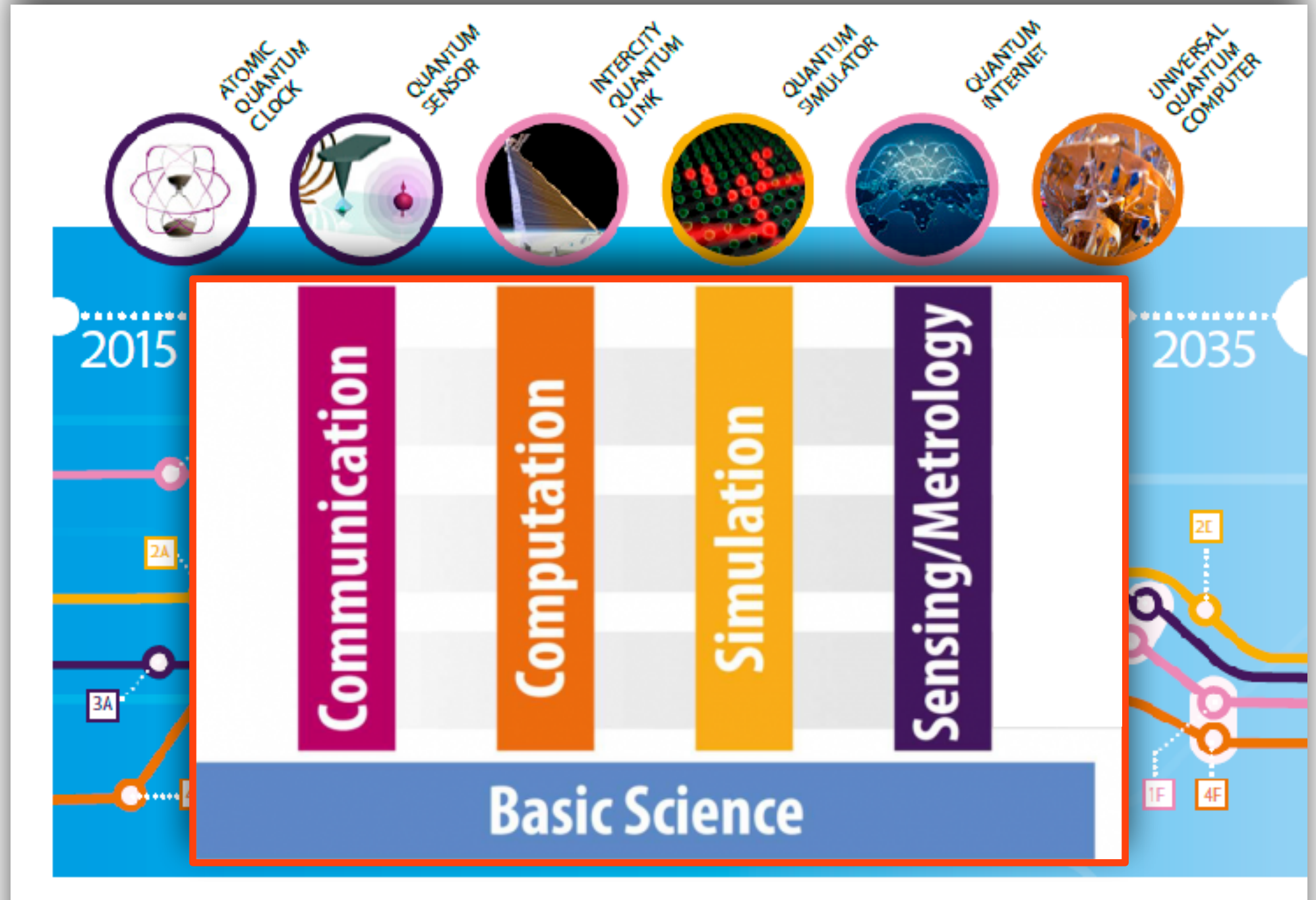
- **Abstract:** Quantum information was born from the merging of classical information and quantum physics. Its main objective consists of understanding the quantum nature of information and learning how to process it by using physical systems which operate by following quantum mechanics laws. Within this framework integrated photonics circuits have a strong potential to realize quantum information processing by optical systems. The aim of this course is to provide an advanced overview on quantum information with a special focus on the simulation of quantum systems by exploiting other quantum systems. Theoretical and experimental aspects will be addressed.

- Required preliminary knowledge of quantum information

- Number of hours: 20

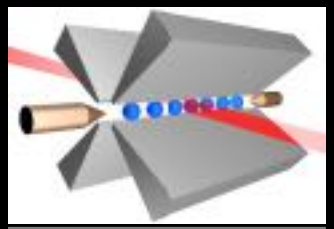
- Period: January/February

Quantum information

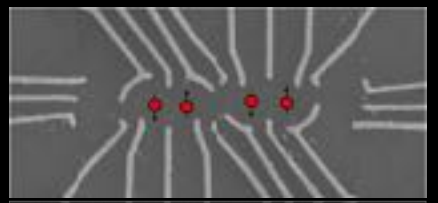


Implementation of Quantum Information

Trapped ions



Spin qubit



Single photons

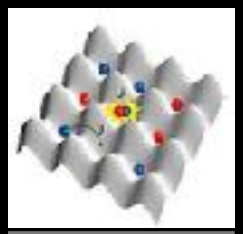
Quantum computation

Quantum simulation

Quantum communication

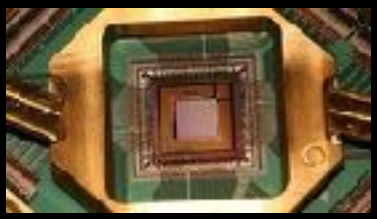
Quantum metrology

Foundations of Quantum Mechanics



Cold atoms in optical lattices

Superconducting qubits



Quantum annealers