

Qub-IT: Quantum sensing with superconducting qubits for fundamental physics



D. Labranca on behalf of the Qub-IT collaboration

- **Main goal:** Itinerant single photon detector based on superconducting qubits
 - Light dark matter candidates detection (Axion, Dark Photon)
- **Quantum Non Demolition (QND) measurement:** low dark count rates and high sensitivity
- Design of a transmon qubit capacitively coupled to a resonator for control and readout with **Qiskit-Metal** (IBM)
- Simulation using **Energy Participation Ratio (EPR)** analysis

