PROGRAM

- Light-matter interaction in circuit QED
  - Jaynes Cummings Hamiltonian
  - Dispersive regime
  - Rabi oscillation and decoherence
- Quantum controls and algorithms
  - Single qubit gates
  - Two qubit gates
  - Optimal quantum controls
  - Channels and noise
- Superconducting circuits
  - LC, 2D, 3D resonators
  - Superconducting qubits (transmon, flux tunable, others)
- Metrology in circuit QED
  - Phase space representation
  - Time vs Frequency regimes
  - Dispersive qubit readout
  - Qubit calibration
- Quantum sensing
  - Dark matters and coupling
  - Experiment design
  - Dark matter and axion searches and experiments
  - Quantum-limited amplification with JPAs
  - Squeezing and single photon detectio