

QUANTUM PHYSICS IN BARCELONA



UNIVERSITAT DE
BARCELONA



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH



Barcelona
Supercomputing
Center
Centro Nacional de Supercomputación



EXCELENCIA
SEVERO
OCHOA



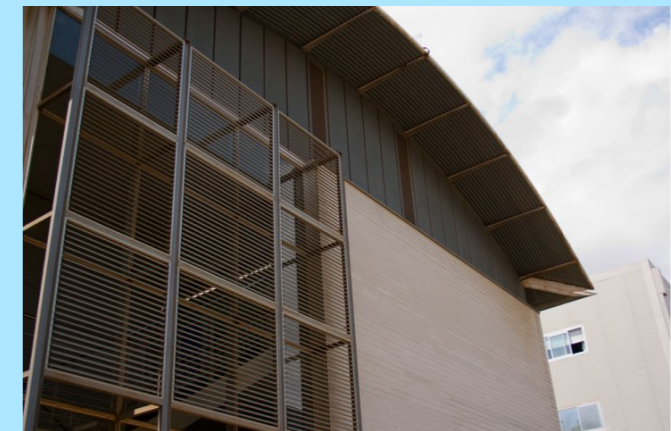
Barcelona Institute of
Science and Technology

LOCAL NETWORK

3 Research Institutes + 3 Universities



Universitat Autònoma de Barcelona



Copyright 2013, Barcelona Supercomputing Center - BSC

THE BEST UNIVERSITIES IN SPAIN
Ranked in the 200 best worldwide
+
3 TOP RESEARCH INSTITUTES in
PHYSICS and COMPUTING



HUMAN RESOURCES IN QUANTUM BARCELONA

25 Professors

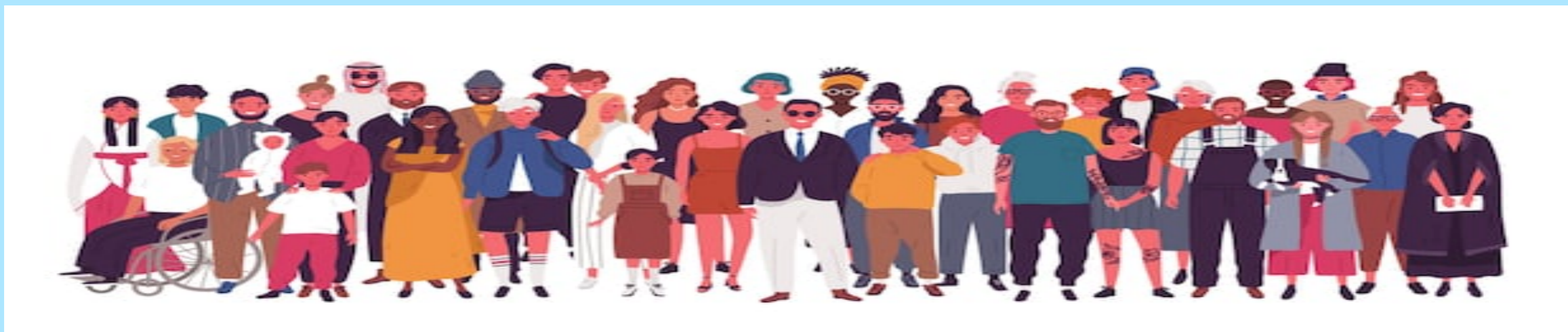
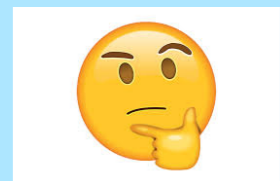
15 Assistant Professors

+ 40 Post-Docs

+70 Ph.D students

+40 Master / Bachelor Students

30 different nationalities !
Only 5% female grup leaders!



THE TEAMS

ICFO

- ✓ **QUANTUM OPTICS THEORY** (M. Lewenstein)
- ✓ **QUANTUM NANO-PHOTONICS THEORY** (D. Chang)
- ✓ **QUANTUM INFORMATION THEORY** (A. Acín)
- ✓ **QUANTUM PHOTONICS WITH SOLIDS EXP.** (H. de Riedmatten)
- ✓ **ATOMIC QUANTUM OPTICS EXP.** (M. Mitchell)
- ✓ **QUANTUM ENGINEERING OF LIGHT EXP.** (J. P. Torres)
- ✓ **ULTRACOLD GASES EXP.** (L. Tarruell)

UAB

- ✓ **QUANTUM OPTICS THEORY** (V. Ahufinger, J. Mompart)
- ✓ **QUANTUM INFORMATION THEORY** (A. Sanpera, A. Winter)

UB

- ✓ **QUANTUM GASES** (M. Guilleumas. B. Julia-Díaz, A. Polls)
- ✓ **QUANTUM INFORMATION THEORY** (J.I. Latorre)
- ✓ **MANY-BODY PHYSICS** (A. Polls)

UPC

- ✓ **QUANTUM MONTECARLO** (J. Boronat)
- ✓ **QUANTUM GASES**

BSC

- ✓ **QUANTUM ALGORITHMS** (A. García Saez)

IFAE

- ✓ **QUANTUM COMPUTING TECHNOLOGY EXP.** (P. Forn-Díaz)

RESEARCH AREAS

✓ Active and growing communities in

QUANTUM OPTICS

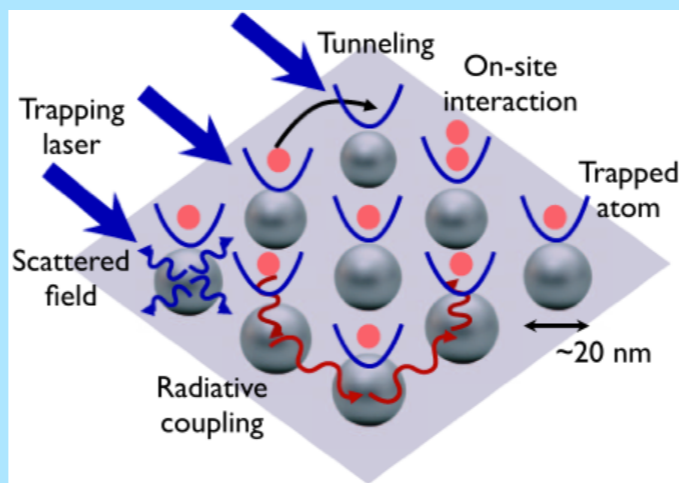
QUANTUM INFORMATION

THEORY & EXPERIMENTS

QUANTUM GASES

RESEARCH AREAS: ICFO QUANTUM

Nano-atomics theory



Quantum memories

Quantum Engineering of Light

Quantum theory

Quantum information theory

Ultracold gases

Quantum nanoplasmonics

Spin squeezing and quantum metrology



D. Chang



A. Acín



J. Torres



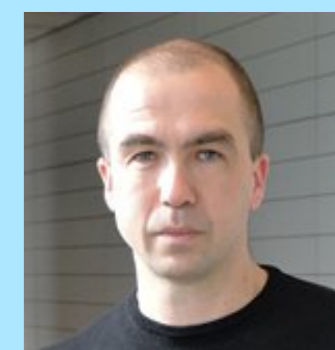
M. Lewenstein



L. Tarruell



M. Mitchell



H. de Riedmaten

RESEARCH AREAS: **UAB** QUANTUM

Shannon theory

Strongly correlated systems

Quantum information theory

Entanglement theory



A. Sanpera

A. Winter

Quantum Optics

Quantum Photonics

IFAE QUANTUM

Superconducting qubits

Ultracold gases



V. Ahufinger



J. Mompart



P. Forn-Díaz

RESEARCH AREAS: **UB** QUANTUM

Many-body physics

Dipolar gases

Vortices in BEC

Topological order

Artificial intelligence

Quantum Information



M Guilleumas



R. Mayol



M Barranco



M Pi



A Polls



B Julia Diaz



X Viñas



J I Latorre



N Barberan



S Iblisdir

RESEARCH AREAS: **UPC** QUANTUM

Quantum Monte Carlo

Polaritons

Strongly correlated systems

ab initio studies of Fermi and Bose systems



G. Astrakharchik



J. Boronat



Ferran Mazzanti



P. Massignan

BSC QUANTUM



A. García

Quantum Algorithms



**QUANTUM
PHYSICS
in
Barcelona**