MASTER IN PHOTONICS – "PHOTONICS BCN"
ERASMUS+ "EUROPHOTONICS-POESII"

MASTER THESIS PROPOSAL

Dates: April - September 2018

Laboratory : Mitchell group (Quantum optics, ultracold atoms, quantum sensors)
Institution: ICFO
City, Country : Barcelona, SPAIN

Title of the master thesis: Atomic clock and high-power light source for laser trapping and cooling of atoms.

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Keywords : Quantum optics, atomic physics

Summary of the subject (maximum 1 page) :

To support our Bose-Einstein condensation experiment, we are seeking a motivated student to develop high-power laser sources with precisely-defined frequencies corresponding to atomic absorption resonances. Such sources are essential to atom cooling and trapping, and will be used in an upgrade to the current Bose-Einstein condensation experiment. Along the way, we hope to develop a very simple optical clock, using the multi-frequency laser source and high-coherence nonlinear optical effects such as electromagnetically-induced transparency and coherent population trapping.

Additional information : contact us with any questions.

* Required skills : Strong motivation, coursework in quantum optics and atomic physics. Lab experience with lasers and atomic physics is a plus.

* Miscellaneous