

## PhD position in Experimental Quantum Gases: Quantum Liquid Droplets with Mixtures of BECs

Sat, 2017-09-16 21:30 - [Leticia Tarruell](#) [1] **At:** ICFO, Barcelona  
**Deadline:** 31 October, 2017

### Location

ICFO-The Institute of Photonic Sciences Castelldefels (Barcelona) Spain  
41° 16' 48.0576" N, 1° 58' 35.8644" E

A PhD position is open in the Ultracold Quantum Gases experimental group led by Leticia Tarruell at ICFO, Barcelona. The group's research focuses on the study of quantum-many body physics with mixtures of ultracold potassium atoms. The goal of this PhD project will be to explore the properties of a novel phase of matter very recently observed by our group: an ultradilute quantum liquid formed by a mixture of two Bose-Einstein condensates (Cabrera et al., [arXiv:1708.07806](#) [2]). During the PhD thesis, the candidate will experimentally measure the density profile of these liquid droplets, their excitations, microscopic properties, etc. in different geometries. Since the existence of the droplets is due to pure quantum effects, with our experiments we expect to understand better the role of quantum fluctuations and correlations in systems of many particles in interaction, and constrain complex quantum many-body theories beyond the mean-field approximation developed together with our theory collaborators.

We are looking for PhD applicants with a good background in quantum optics, atomic physics or condensed-matter physics, and a strong motivation for setting up and conducting challenging experiments in a small team. We offer training in a broad range of cutting-edge experimental techniques (from optics, electronics, ultra-high vacuum technology and computer control to quantum state engineering), as well as in theoretical atomic, quantum, statistical, and condensed matter physics.

The PhD position is funded, and the expected starting date is Fall 2017.

To apply, please send your CV and the name of two people who could provide letters of recommendation to Leticia Tarruell: [leticia \[dot\] tarruell \[at\] icfo \[dot\] es](mailto:leticia.tarruell@icfo.es)

For more details on the position please check: <http://www.qge.icfo.es/open-positions> [3]

- [PhD](#) [4]

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<http://qurope.eu/db/jobs/phd-position-experimental-quantum-gases-quantum-liquid-droplets-mixture-s-becs>

### Links:

- [1] <http://qurope.eu/users/tarruell>  
[2] <https://arxiv.org/abs/1708.07806>  
[3] <http://www.qge.icfo.es/open-positions/>  
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