

PhD positions in Theoretical Quantum Physics at Romero-Isart's Group in Innsbruck

Tue, 2021-10-26 15:27 - [Oriol Romero-Isart](#) [1] **At:** IQOQI & University of Innsbruck
Deadline: 10 January, 2022

Location

IQOQI - Institute for Quantum Optics and Quantum Information Innsbruck 6020 Austria

We are inviting applications to fill 2 PhD positions to join [the theory research group lead by Oriol Romero-Isart](#) [2] in Innsbruck (Austria), jointly affiliated with the [Institute for Quantum Optics and Quantum Information \(IQOQI\)](#) [2] of the Austrian Academy of Sciences and the [Institute for Theoretical Physics](#) [3] of the University of Innsbruck.

The goal of the project is to prepare macroscopic quantum superpositions at unprecedented regimes of mass and spatial delocalization. The PhD students will join our team of theorists working very closely with the experimental groups of M. Aspelmeyer (Vienna), L. Novotny (ETH Zürich), and R. Quidant (ETH Zürich), as this project was awarded with a [ERC Synergy Grant O-Xtreme \(2021-2027\)](#) [4]. We aim at (i) testing quantum mechanics in regimes where collapse models predict a breakdown of the superposition principle, (ii) establishing a new generation of ultra-precise sensors, and (iii) opening the door to exploring the interplay between quantum mechanics and gravity. This will be accomplished by studying levitated objects in vacuum, understanding their center-of-mass motion, rotational dynamics, as well as internal solid-state excitations interacting with the environment, as explained in this [quantum science seminar](#) [5] and this [review article published in Science](#) [6].

Candidates should have a background either in theoretical quantum physics with strong analytical skills, or in computational physics (we are particularly interested in deep machine learning) to develop a numerical simulator modelling complex experiments.

One of the group core values is equality. Our goal is to have a gender balanced group and we thus encourage female candidates to apply.

PhD applications -- containing CV, publications (if available), grades from university studies, motivation letter (1 page max.), and contact details of at least one potential referee -- should be submitted electronically using the subject line "PhD_Application" to [oriol \[dot\] romero-isart \[at\] uibk \[dot\] ac \[dot\] at](mailto:oriol[dot]romero-isart[at]uibk[dot]ac[dot]at)" delay="150" rel="noopener noreferrer" target="_blank">oriol [dot] romero-isart [at] uibk [dot] ac [dot] at

Positions will be open until they are filled. Gross salaries per year are around 31,000 Eur (PhD student).

- [PhD](#) [7]

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Links:

[1] <http://qurope.eu/users/oromeroisart>

[2] <https://iqoqi.at/en/>

[3] <https://www.uibk.ac.at/th-physik/>

[4] <https://www.uibk.ac.at/newsroom/13-million-euros-for-basic-quantum-research.html.en>

[5] <https://www.youtube.com/watch?v=fL3JXIR7fkk&t=0s>

[6] <https://www.science.org/doi/10.1126/science.abg3027>

[7] <http://qurope.eu/db/jobs/type/phd>