fter the master's degree, many of our students begin a PhD thesis in a research laboratory (public or private) with a grant from the Ministry of Education or from other forms of financial support (CIFRE, BDI, DGA, Ile de France, CNano,…).

Admission:

The admission is done in two steps: an application form and an interview. This course is addressed to students that have validated the first year of a master's (equivalent to four years education in a University).

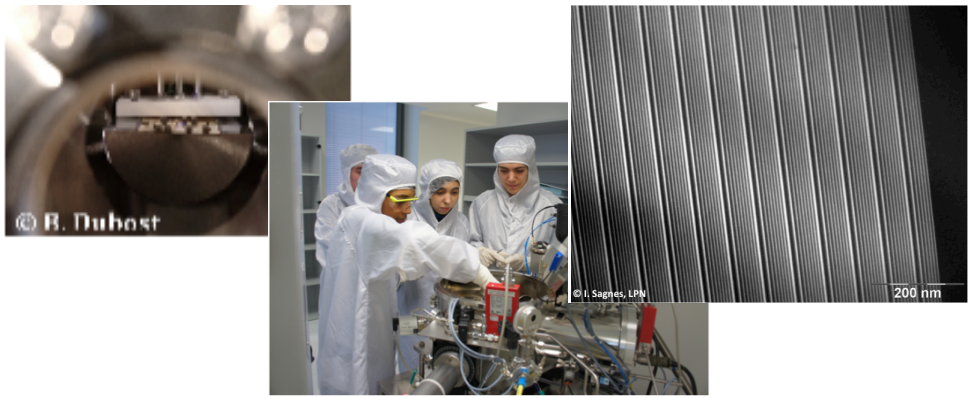
The application form can be downloaded from the web site of the Master:
http://www.master-dispositifs-quantiques.eu/
and sent by mail to sara.ducci@univ-paris-diderot.fr

or by regular mail to

Sara DUCCI
Université Paris Diderot – Paris 7
Laboratoire Matériaux et Phénomènes Quantiques
Bâtiment Condorcet case 7021
75205 Paris cedex 13 FRANCE

Contact:

Mme Sara Ducci
Tel : +33 1 57 27 62 25
E-mail sara.ducci@univ-paris-diderot.fr



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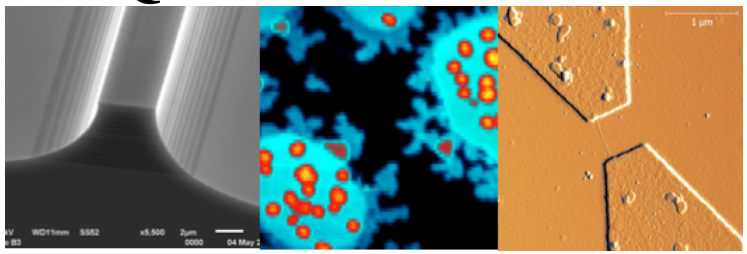
ÉCOLE POLYTECHNIQUE UNIVERSITÉ PARIS-SACLAY

Master Program

Quantum Devices

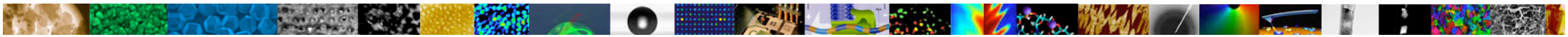


Theoretical and experimental formation on quantum phenomena and devices

Offered by

Université Paris Diderot
Ecole Polytechnique
in partnership with ENS Cachan

All courses given in english



'Quantum Devices' **is a training course for the students having validated the first year of a master's degree; the goal of this course is to give a high level theoretical and experimental training on different kind of quantum phenomena with a particular attention to quantum devices and nanotechnologies. In this domain of research, the boundaries between physics, chemistry, material science, biology and molecular medicine have become blurred.**

In this field, fundamental and applied researches enrich each other: theoretical advancements are accompanied by the progress in material science (creation of new materials, control of their elaboration) and by the realization of new and unique experimental techniques (near field microscopy, electron microscopy techniques). These advancements, awarded with several Nobel prizes, have had important consequences in fundamental physics; today we are able to observe and manipulate single atoms or conceive quantum devices: semiconductor sources and detectors, molecular transistor, superconducting circuits for quantum information, hard disks based on giant magnetoresistance, DNA chips,….

Organization of the training course

The first term (September-January) includes lectures on the fundamental concepts and tools of quantum photonics and electronics in condensed matter, high-tech analysis tools (electronic microscopy, STM, AFM…), a large panorama of quantum devices and functionalized materials and proposes a series of seminars on hot research topics.

The second term (January-June) details the different fields of research (Electronic transport, Spintronics, Quantum Photonics) and includes a research project.

The course is given by lecturers from several laboratories specializing in quantum devices and nanosystems.

The training is based on a permanent interaction between students and research teams, and includes: experimental projects and clean room formation, guided tours of laboratories and a research project.

Web site of the Master :

http://www.master-dispositifs-quantiques.eu/

Campus Paris Rive Gauche

TRAINING COURSE

FIRST TERM	ECTS
Electrons and phonons in nanostructures	3
Quantum theory of light	3
Advanced solid state physics	3
Introduction to photonic quantum devices	3
Introduction to electronic quantum devices	3
Nanomaterials for nanomedicine	3
Imaging nano-objects	3
Experimental projects on nanosciences	6
Visit to Labs	3
SECOND TERM	
Quantum optoelectronics	3
Devices for quantum information	3
Nanomagnetism and Spintronics	3
Spin polarized electron physics	3
Research Project	18