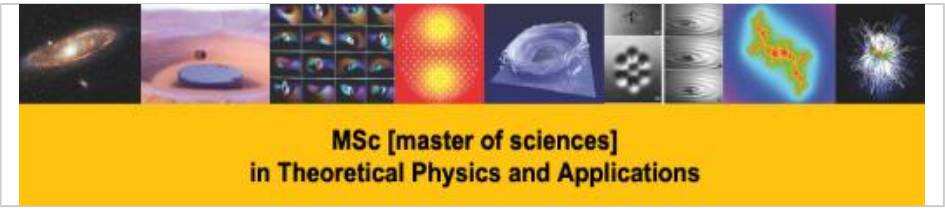
Master Physique : M2 Physique et Modélisation option Physique Théorique / Master of Physics option Theoretical Physics



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Présentation

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(one of the paths of the first year (M1) of the CYU 's Master of Physics).

It aims at providing students with a high-level formation in Theoretical and Computational Physics, together with a deeper insight in one selected research field: Statistical Physics, Quantum systems, Condensed matter, Integrable Systems, Complex Systems, Dynamical Systems.
In addition to solid foundations in Fundamental Physics, the students will have acquired a reinforced formation in the domain they chose not only through the specialized courses they take during the third semester but also by the practical experience they will have obtained after four month of research work.

Enjeux

This second year of Master definitely prepare students to start a PhD work in the domain of theoretical physics, nevertheless it has been done in such a way, that reorientation to more applied physics is made possible.
The choice of a national French degree fully taught in English has the double advantage of an international open up:
It makes this training accessible to students from all over the world and allows world specialists to participate in the teaching and supervision of students, thus guaranteeing excellence in the discipline.
It also allows French-speaking students to receive disciplinary training in a familiar environment, while being exposed to international realities and improving their practical and professional English.
At the European level, the absence of language barriers facilitates exchanges of both students and professors between universities and possible double degrees.

Durée de la formation

- 2 années

Lieu(x) de la formation

- Site de Saint-Martin

Public

Niveau(x) de recrutement

- Master 1

Stage(s)

Oui, obligatoires (, à l'étranger), optionnels (multiples,)

Langues d'enseignement

- Anglais

Rythme

- Temps plein

Modalités

- Présentiel

Renseignements

secretariat-dept-physique@cyu.fr

+33 1 34 25 65 56

Admission

Pré-requis

Formation(s) requise(s)

240 ECTS or equivalent (3/4 years BSc one year of Master) in an academic program including knowledge of Electromagnetism, Quantum Mechanics, Statistical Mechanics, and Mathematics for Physics are required. A good mastering of English is essential to follow the lectures. Knowledge in coding (python for example) and computational methods is a real plus.

Candidature

Modalités de candidature

There are three ways to apply :

- e-candidat (for students in France)
- Campus France (from abroad)
- Direct application to the program (when a personal contact with the master academic committee is needed)

Modalités de candidature spécifiques

Non-EU students have to apply via their local Campus France agency (through a new procedure called "Etudes en France").

Candidates can in addition, if they have special issues to discuss (like fees exemption or grant application), apply by sending an email to one of the academic directors of the program (they should in any case contact their local Campus France agency).

Conditions d'admission / Modalités de sélection

Admission is based on the student's transcripts, the syllabus of his or her curriculum and recommendation of professors. The study of the application file may be completed by an online interview.

Et après ?

Niveau de sortie

Année post-bac de sortie

- Bac +5

Niveau de sortie

- BAC +5

Activités visées / compétences attestées

Analyze a given problem and link it to general and well known results of physics within the framework of a fixed model.
Apply abstraction, logic and knowledge of orders of magnitude to question the relevance of a suggested model.
Carry out a reasoning, knowing how to identify the required hypothesis that underlie it and to elaborate the proofs to establish it, with the help of either mathematical or computational tools.
Analyze results with a critical, curious and innovative mind.
Communicate in writing and orally in a rigorous and appropriate manner.
Be familiar with the large disciplinary knowledge of fundamental physics and Master some specialization domain of theoretical physics.

Poursuites d'études

This master program is definitely research oriented.
Most students will continue with a PhD program.

Programme

This second year of Master of Theoretical Physics of CYU is fully taught in English. It is supported by the research teams of the Laboratoire de Physique Théorique et Modélisation (LPTM CNRS UMR 8089).Students acquire solid foundations in Quantum Mechanics, Mathematical and Statistical Physics, Condensed Matter Physics and Dynamical Systems. They are exposed to a broad spectrum of subjects: from the mathematical accuracy of integrable models to the complexity of biological systems, social paradigms or communication networks. They get a reinforced formation in their domain of specialization through the optional courses they take during the third semester but also by the practical experience they have thanks to four months of research work.