

LabEx P2IO

Teaching and Training Program

Background

Each of the P2IO partners is strongly involved in teaching and training, from Master to PhD. These trainings are naturally mainly supported by the “Université de Paris Sud 11” and the “Ecole Polytechnique”.

The P2IO Labex is a mean to coordinate the practical organisation (and/or funding) of educational projects with several partners (CEA-INSTN, CNRS, Université Paris 11, Ecole Polytechnique,..). Emphasis is put on the need for an attractive Master (and the associated M2), in a first step, and, in a second step, attractive Ecoles Doctorales.

Setting up of the educational projects appearing in the P2IO Labex

We have proposed two kinds of projects:

- - 5 recurrent actions, which aim is pedagogical but also to attract the best students
- - 1 large scale project, scheduled over 10 years: modernization of equipments for M2 practical works, that take place in our laboratories. Each of these projects is coordinated by someone implied in the project realisation.

Evaluation of recurrent actions

A.1. Summer school.

A **summer School**, each year, on the scientific items covered by the P2IO, for L3 students. Located in the Paris-Saclay campus, this School would be a very good way to bring young students to our laboratories, stimulate their liking for physics in general, and eventually help them in their future specialization.

The summer school first class named “Georges Charpak” has been organized in july 2011 (22 students coming from 10 schools or universities).

(see <https://indico.in2p3.fr/conferenceDisplay.py?confId=4988>)

The summer school second edition named “Ettore Majorana” will happen in july 2012 (30 students already registered¹ coming from 9 schools or universities).

(see <https://indico.in2p3.fr/conferenceDisplay.py?confId=6147>)

The summer school is partly funded by the labex : 45 keuros for the two first sessions

We are investigating with in2p3 the possibility to open the summer school to continuing education.

A.2. Pedagogical travels.

M2 that are associated to the Labex P2IO have received funds for the pedagogical travels :

- Noyaux Particules, Astroparticules et Cosmologie : 10 keuros
- Astronomie, Astrophysique et Ingénierie Spatiale : 8 keuros
- Accélérateurs de Particules et Interaction avec la Matière : 5 keuros
- Physique et Ingénierie de l'Energie -Physique et Environnement : 5 keuros
- Physique des Hautes Energies : 3 keuros
- Physique et Systèmes Biologiques : 3 keuros

Total pedagogical travels : 34 keuros

A.3. M2 grants program.

The « Fondation X » offers a certain number of grants in order to welcome excellent foreign students (Master level). We would like to follow this idea, and more precisely to give **grants for M2 students** and grants for students during their training periods in our laboratories (a remuneration is mandatory).

We are evaluating the relevance of these grants as there are other opportunities for such grants.

Decision : beginning of july.

A.4. Funding of federative Workshops

¹ Final registrations have to be confirmed by students.

There are several actions done in the M2 to help their students to find a thesis. The idea is to cross these different actions to create a common federative workshop for M2 students to help them to find their thesis.

This action has not yet received the consensus of all M2 because of several problems of scheduling.

A.5. Student Laptop

Our students have to become familiar as soon as possible with using modern computing tools, mainly for scientific programming. Many students discover really this topic during their training period (L3, or even M1).

We would like to give a laptop to an important part of the students joining the Physique Fondamentale subject. The pedagogical project corresponding to this necessity consists in four items:

- Students carry out part of data analysis (inside practical works) using modern numerical tools
- Teachers can feel free to add numerical approaches in their exercises.
- For their computing project, students will benefit from a double counselling: counselling by a PhD student belonging to a P2IO laboratory for physics, counselling by one of the Physique Fondamentale teachers for the computing side.
- Students and teachers can take the best advantage of the pedagogical facility provided by ENT (Environnement Numérique de Travail) –for example Dokeos- ; they can also have a free access to the University's library reviews.

This action has not yet received the consensus of the direction board of the Labex P2IO.

Evaluation of Large Scale Project

Most of the M2 quoted in this document is made of high level practical works (so called TP), settled in our laboratories. These practical works need advanced, ultramodern material, regularly updated. Part of this material will be shared with M1 trainings. We foresee to bring up to date part of these TPs, create new TPs, and make sure that they will be well maintained over all the laboratories.

The Labex P2IO has funded M2 'Noyaux Particules, Astroparticules et Cosmologie' with 26 keuros for the upgrade of existing labworks.

Project of new labworks are under study with two major directions:

- **developping in beam experiments**
- **developping multi-site collaboration experiments**

The new opportunitie of a special place in the campus of Orsay dedicated to teaching and training will have some influence in the evolution of the labwork project. Discussion will happen beginning of july.