

HCERES evaluation of Laboratoires de la vallée d'Orsay

- CSNSM
- IMNC
- IPNO
- LAL
- LPT



Teaching Activities

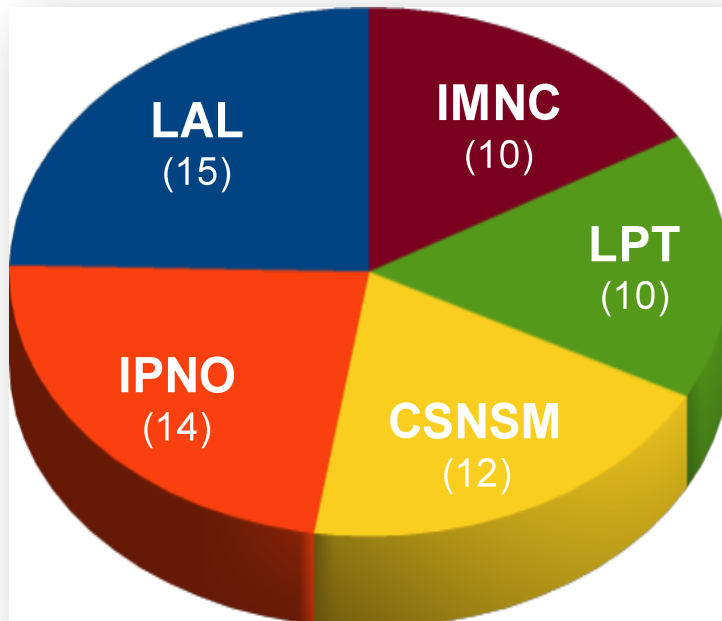
Introduction: Tutelles

All 5 labs are UMR (Unité Mixte de Recherche CNRS/University)

A total of **61** EC (PR and MCF)

1 PR : 2 MCF

[1 DR : 1 CR for CNRS staff]



CNRS



IN2P3 INP INSU
INC INSB

Universities

84%



Comprendre le monde,
construire l'avenir



5 Faculties (UFR)

13%



PR = professor, MCF = assistant professor, EC = teaching staff (PR+MCF)

Science Faculty @ UPSud

LA FACULTÉ EN QUELQUES CHIFFRES

10 200
étudiants

Une offre de formation large qui couvre l'ensemble des disciplines scientifiques de la licence au master : formations classiques, formations professionnalisantes et formations sélectives.

236
ha de
campus

dont **160 ha de jardin botanique** et **175 000 m²** consacrés aux **laboratoires de recherche**.

6

départements de disciplines d'enseignement et de recherche, un pôle de recherche et d'enseignement en histoire et diffusion des sciences, un service d'enseignement des langues, un service de la formation continue, un service de la formation des enseignants.

1 500
doctorants

12 écoles doctorales
Paris-Saclay,
42 laboratoires

800
enseignants-chercheurs

et **500 ingénieurs, administratifs, sociaux et de santé (IASS)**

~ 7% in the 5 labs

www.sciences.u-psud.fr

Departments:

Biology

Chemistry

Informatics

Mathematics

Physics

Earth Science

Chemistry Department (108 EC)
~ 7% (8) in the 5 labs

Physics Department (~ 200 EC)
~ 26% (53) in the 5 labs

Teaching activities



Comprendre le monde,
construire l'avenir



- strong link between Masters/Bachelor and labs
- important managing efforts at all levels
- teaching activities transverse between labs
- strong involvement in teaching from non-EC staff

Teaching activities: CSNSM



Chemistry Department

32% EC of total research staff:

9 MCF

3 PR

Training: ~1 internship / 1 perm. staff

~23% non-EC perm. staff teaching

25 HDR (67% of perm. sci. staff)

(ED 576, ED 564, ED 127)

49 PhD (2013-2018)

Highlights

Summer School (P2IO)



« De l'infiniment grand à l'infiniment petit »

« Des particules aux étoiles »

« Voyage de l'infiniment petit à l'infiniment grand »



TEDEd

«Where does gold come from?»

HDR = Habilitation à diriger des recherches; ED = Ecole Doctorale

Teaching activities: CSNSM

Teaching, training and responsibilities



Nuclear Energy Master

M2 tracks:

Fuel Cycle (chemistry)

Decommissioning and waste management

Nuclear Plant Design

Operations

Nuclear Reactor Physics & Engineering

~ 80 students

Headmaster: CSNSM/IPN EC UPSud

Partners: CEA, CNRS, UPSud, ENSTA, CentraleSupélec, X



Training and platforms

65 internships (2013-2018)

SCALP platform used for training

Internships funded by industry

Headmaster for Nuclear Physics
Labs for Magistère (on IPNO site,
~100 students)



Responsibilities

Dept. vice-president for education

Co-head 1st year Bachelor

Members in Department Council

Members in CCSU 28, 29, 34, 31-33

Representatives in CNU

...

Teaching activities: CSNSM

Outreach

Joliot Curie School Lecturers



IN2P3 Instrumentation School Lecturers

“From Physics to Detection”

“From Detection to Measurement”

Teaching activities: IMNC



66% EC of total research staff:

8 MCF

2 PR

Training: ~2 internship / 1 perm. staff

~37% non-EC perm. staff teaching

10 HDR (67% of perm. sci. staff)

(ED 576, ED 564, EOBE, BIOSIGNE)

17 PhD (2013-2018)

L3 PRO (UPD, UPSud)

Strong involvement in Biophotonics track

M2 SBCP (UPSud, UPD, Inst. D'Optique)

Track headmaster

M2 Physics Biology Interface (UPD, UPSud, UPMC)

Track headmaster

Biology and Bio-chemistry Bachelors (UPD, UPSud, UEVE)

Lectures in :

Bio-photonics

Bio-physics

Bio-mechanics ...

Interdisciplinarity

Masters Physics, Helth, Medecine (UPD)

Lectures in:

Imaging technics

Cellular, Optical and Microscopic Imaging

M2 University of Liban, Liban

Lectures in Biomedical Imaging

Teaching activities: IMNC

Training, outreach and responsibilities

Training

50 internships (2013-2018)

« De l'infiniment grand à l'infiniment petit »



Responsibilities

Representatives in Education Program of P2IO

Members in CCSU 29-34

...

M!SS
initiation • sensibilisation • sciences

île de France

Activity books for CE2 and 3^e

Kids visits at IMNC

Teaching activities: IPNO



Chemistry Department

20% EC of total research staff:

10 MCF

4 PR

Training: ~1 internship / 1 perm. staff

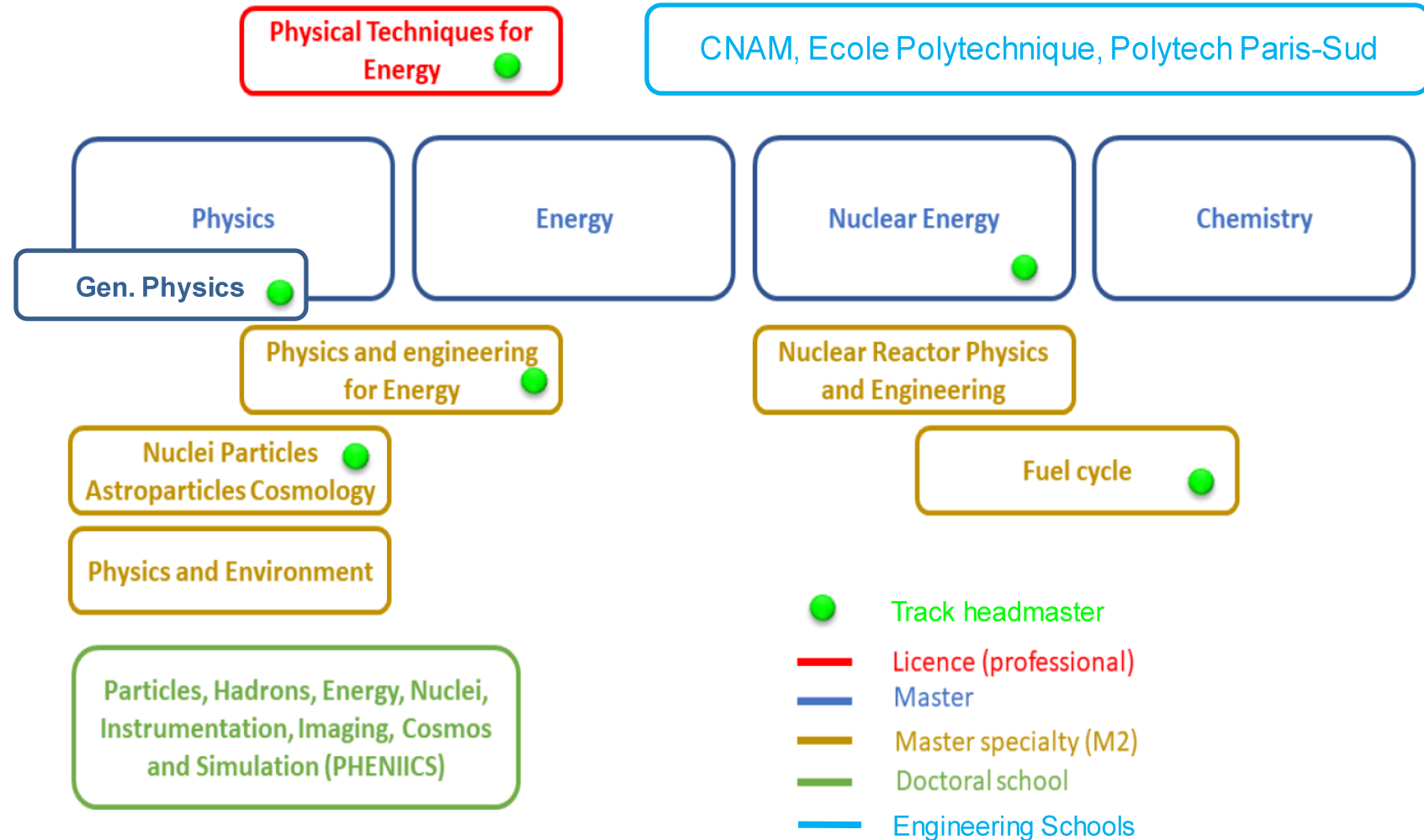
~14% non-EC perm. staff teaching

47 HDR (68% of perm. sci. staff)

(ED 576)

107 PhD (2013-2018)

Topics: Subatomic Physics and Applications, Radiochemistry, Instrumentation and Accelerator Physics



Teaching activities: IPNO

Teaching, training and responsibilities



~ 40 students (UPSud, UPD, UPMC, INSTN)

Headmasters: IPN/LAL

Lecturers (>50% CNRS/CEA staff)

All 5 Labs involved



Nuclear Engineering Master

Headmasters: IPN/CSNSM EC UPSud

Lecturer in Wuhan University School of Engineerings, China

Training and platforms

273 internships (2013-2018)

LabWork and Lecture rooms

Internships funded by industry

training in accelerator Division

ALTO platform for training

Others

CERN MasterClasses (ALICE)

Doctoral Schools Lecturers



Responsibilities

Members in Department Council

Members in CCSU

President of P2I Department

Vice-dean of Faculty of Science

(Co-)director of ED 576

...

Teaching activities: IPNO

Schools organization/participation



« De l'infiniment grand à l'infiniment petit »



ECT*

EUROPEAN CENTRE FOR THEORETICAL STUDIES
IN NUCLEAR PHYSICS AND RELATED AREAS



« Des particules aux étoiles »

« Solvants ioniques pour énergie nucléaire »

« “La transition vers les réacteurs du futur et la transmutation” »

Creation of :

Engineer in Nuclear Science training program at CNAM

M1 General Physics for international students

Teaching activities: LAL



22% EC of total research staff:

8 MCF

7 PR

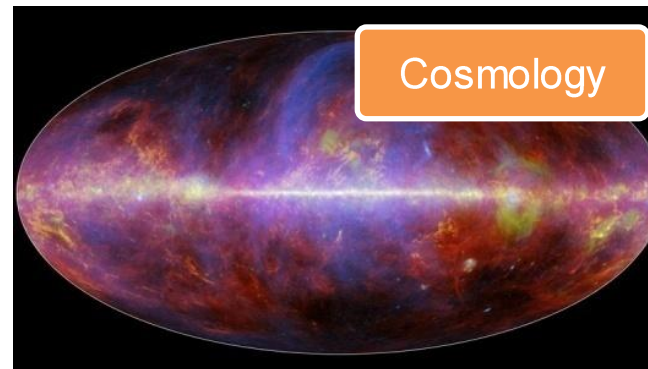
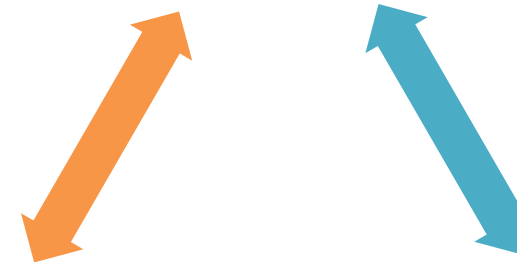
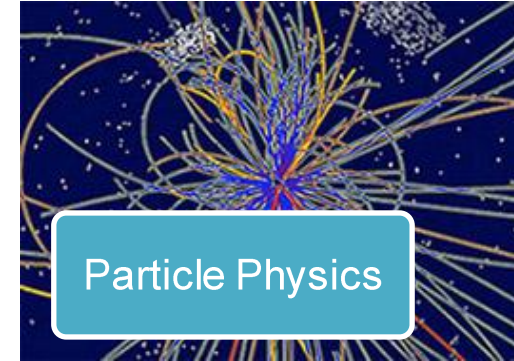
Training: **~2** internship / 1 perm. Staff

~15 % non-EC perm. staff teaching

57 HDR (~80% of perm. sci. staff)

(ED 576)

92 PhD (2013-2018)



Teaching activities: LAL

Teaching, training and responsibilities



M2 Grands Instruments

université
PARIS-SACLAY

~ 20 students/year

Headmaster: LAL

Lecturers (>20% CNRS/CEA staff)

4 out of 5 Labs involved



~ 40 students/year (UPSud, UPD, UPMC, INSTN)

Headmasters: LAL/IPN

Lecturers (>50% CNRS/CEA staff)

Training and platforms

375 internships (2013-2018)

Lecture and Informatics rooms

Training in accelerator physics
(MOOC in preparation)

Pedagogical Platforms (CALVA, PHIL,
XFEL, THOMX, CORTO,
VIRTUAL DATA...)

Others

Doctoral Schools Lecturers

CERN Masterclasses



Responsibilities

Members in Department Council

Members in CCSU

(Co-)director of ED PHENIICS

Dept. VP for education (chem.&phy.)

Magistère Orsay

Representatives in CNU

...

Teaching activities: LAL

Outreach

« Passeport pour les 2 infinis »



Revue « Elementaire » IN2P3



« Des particules aux étoiles »

Schools organization/lectures

ACO sciences



Winter School of HEP in Palestine
(created in 2016)
~40 students (L3-M1)

Teaching activities: LPT



35% EC of total research staff:

6 MCF

4 PR

Training: **~3** internship / 1 perm. Staff

~xx% non-EC perm. staff teaching

21 HDR (~**70%** of perm. sci. staff)

(**33%** in ED 576, **66%** ED 564)

32 PhD (2013-2018)

Teaching

M1 General Physics, M2 NPAC, M2 iCFP

Doctoral Schools Lecturers

Lecturers in Ecole de GIF – CNRS

Formation continue enseignants secondaire

International Summer School on QCD



« Des particules aux étoiles »

« Voyage de l'infiniment petit à l'infiniment grand »

Les deux infinis et nous - Voyages de l'infiniment grand à l'infiniment petit

Responsabilities

CCSU Members

Physics Department Council members

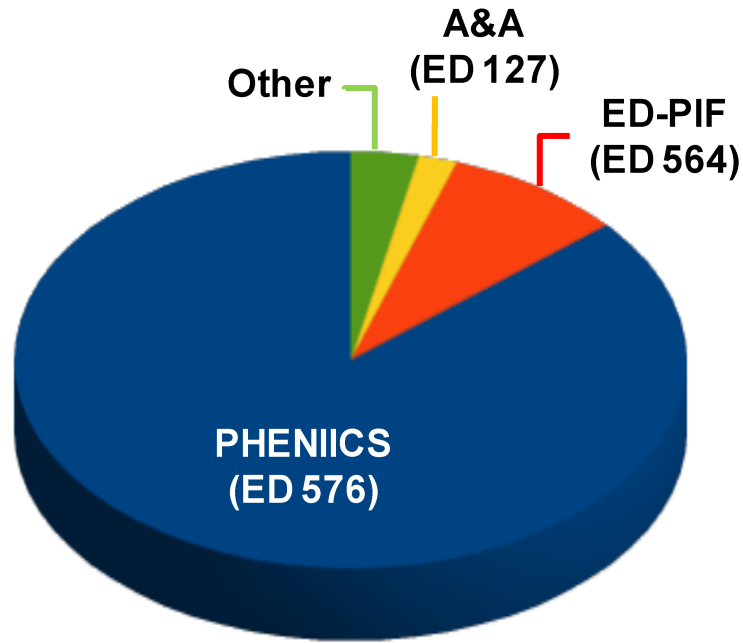
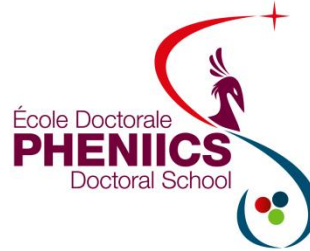
Lecturers in Ecole de GIF – CNRS

Co-head of M1 General Physics

Graduate Schools (ED)

5 labs HDR distribution over EDs

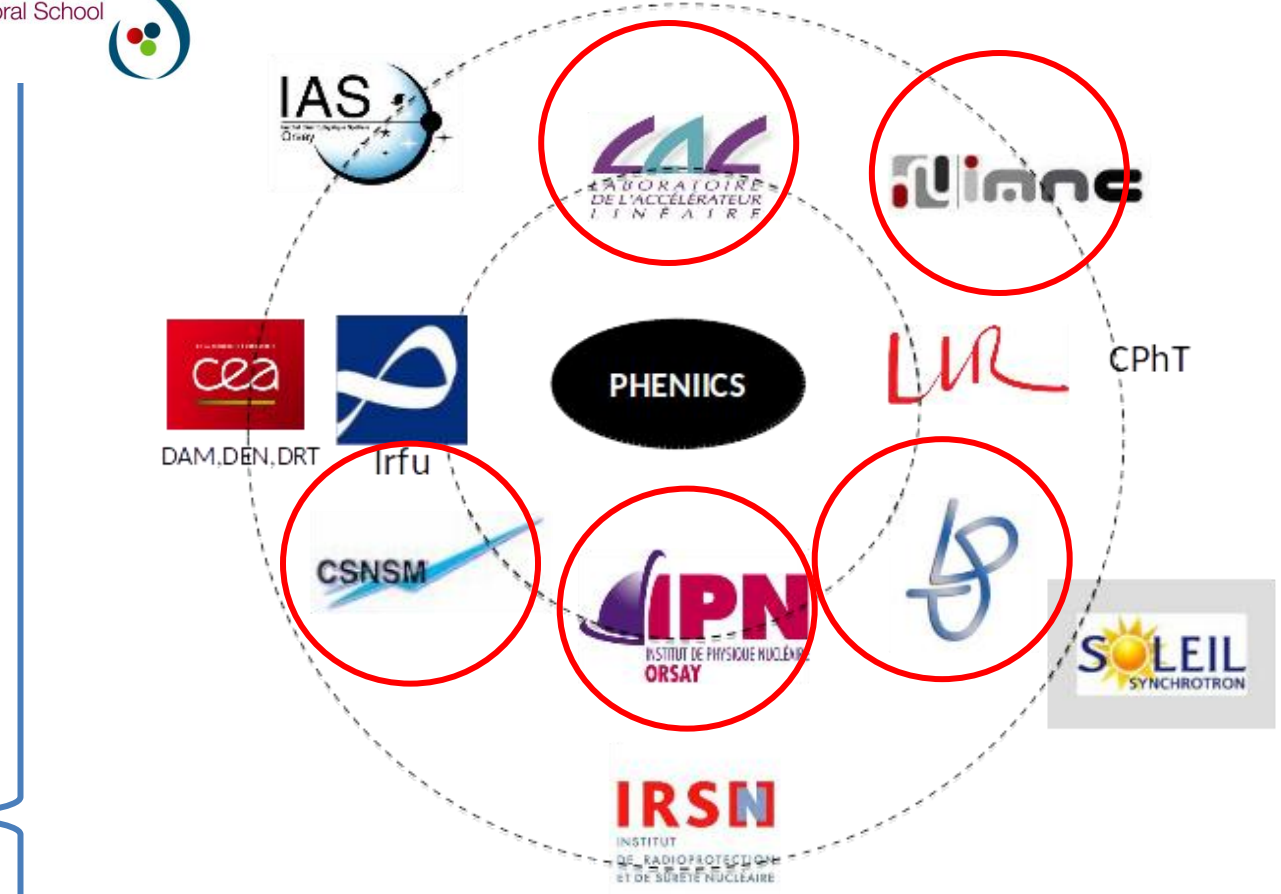
(20 ED in UPSay)



PHENIICS (ED 576)

LABS

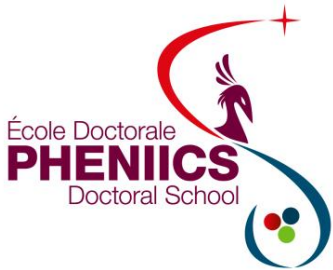
➤ 55% of total HDR are in the 5 labs (160)



CPHT, CSNSM, DAM-DIF, DEN-DANS, IAS, IMNC, IPN, DSM-IRFU (SACM, SEDI, SIS, SPhN, SPP), IRSN, LAL, DRT-LIST, LLR, LPT, Soleil

Graduate Schools (ED)

Scientific contour



PHENIICS

Particules, Hadrons, Energie, Noyau,
Instrumentation, Imagerie, Cosmos et Simulation

- Astroparticles and Cosmology
- Nuclear Astrophysics and Nucleosynthesis
- Radioprotection and radiochemistry
- Nuclear Energy
- Medical Imaging and Radioactivity
- Spatial Instrumentation
- Accelerator Physics
- Hadronic Physics
- Particle Physics
- Radio and hadron-therapy
- Nuclear Structure and Reactions
- Detectors in subatomic physics

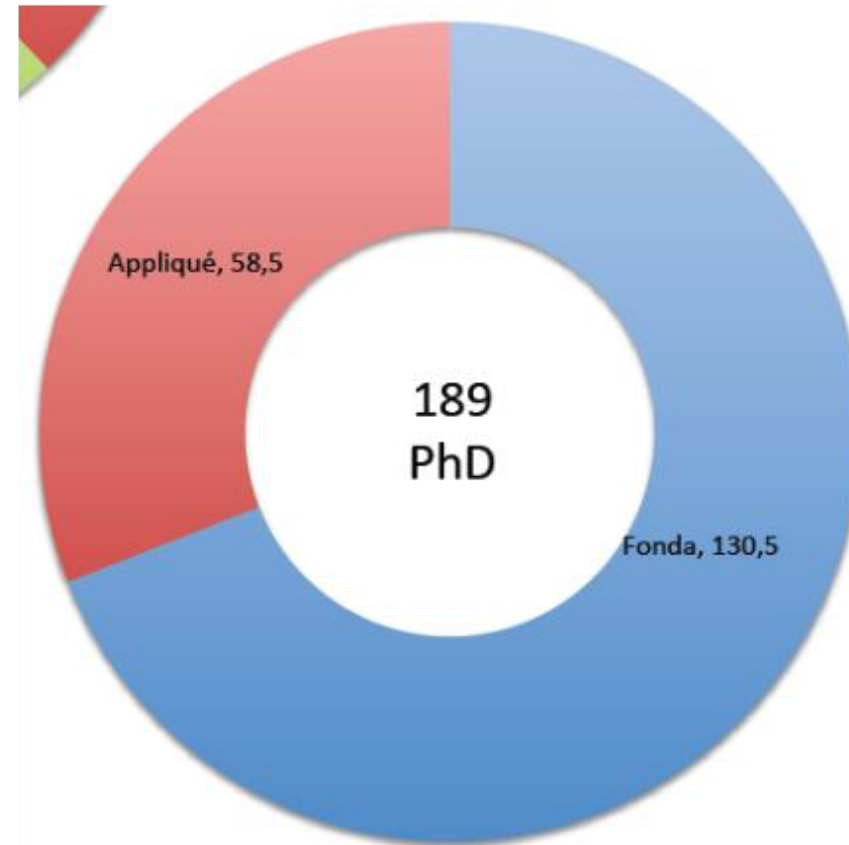
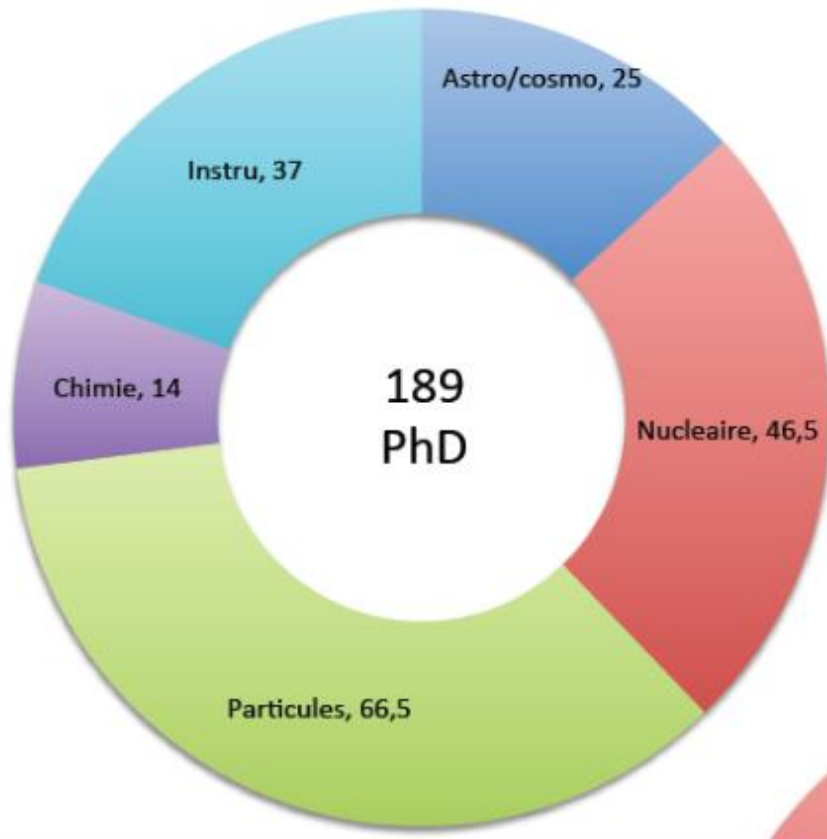
General Scope described in the MOOC : Des particules aux Étoiles

For the 5 labs:

- ~ 300 PhD and ~3500 sci. pub. (2013-2018)
- PHENIICS Director(s) from LAL/IPN
- 1 PhD representative in each Lab Council
- committee for PhD survey in each lab
- mean PhD duration : 3 years

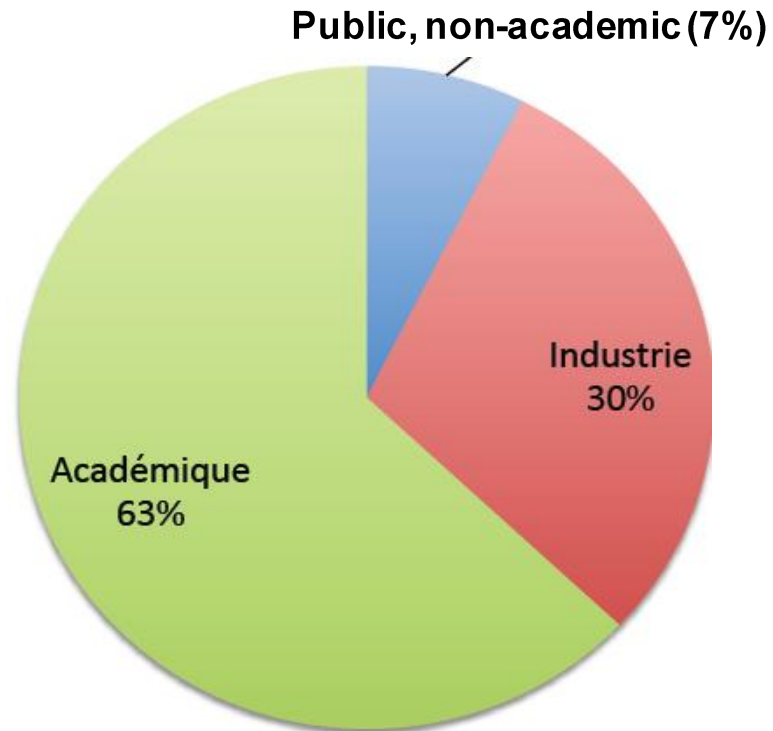
Graduate Schools (ED)

Physics Fields repartition of students in PHENIICS



Graduate Schools (ED)

After the thesis



PhD and Post-doc association: D2I2

- Active PhD from the 5 labs



(during and after theses)



Strong support for education and training of students

P2IO (labex)

- School : « De l'infiniment grand à l'infiniment petit » (started in 2011, on going)
- LabWorks and experimental platform funding (ex: 25k€ for NPAC, 25k€ for Nuclear Energy track)
- recurrent funding for student visits (ex: NPAC visit to CERN, 3 days, 40 students)
- PhD funding
- **will continue funding education (renewal for 5 years in progress)**

P2I (UPSay Research Department)

- internship funding

Project 2018 - 2023

Unique UMR CNRS/Paris Saclay

Goals

Teaching and Training :
high priority element in the new Unique UMR

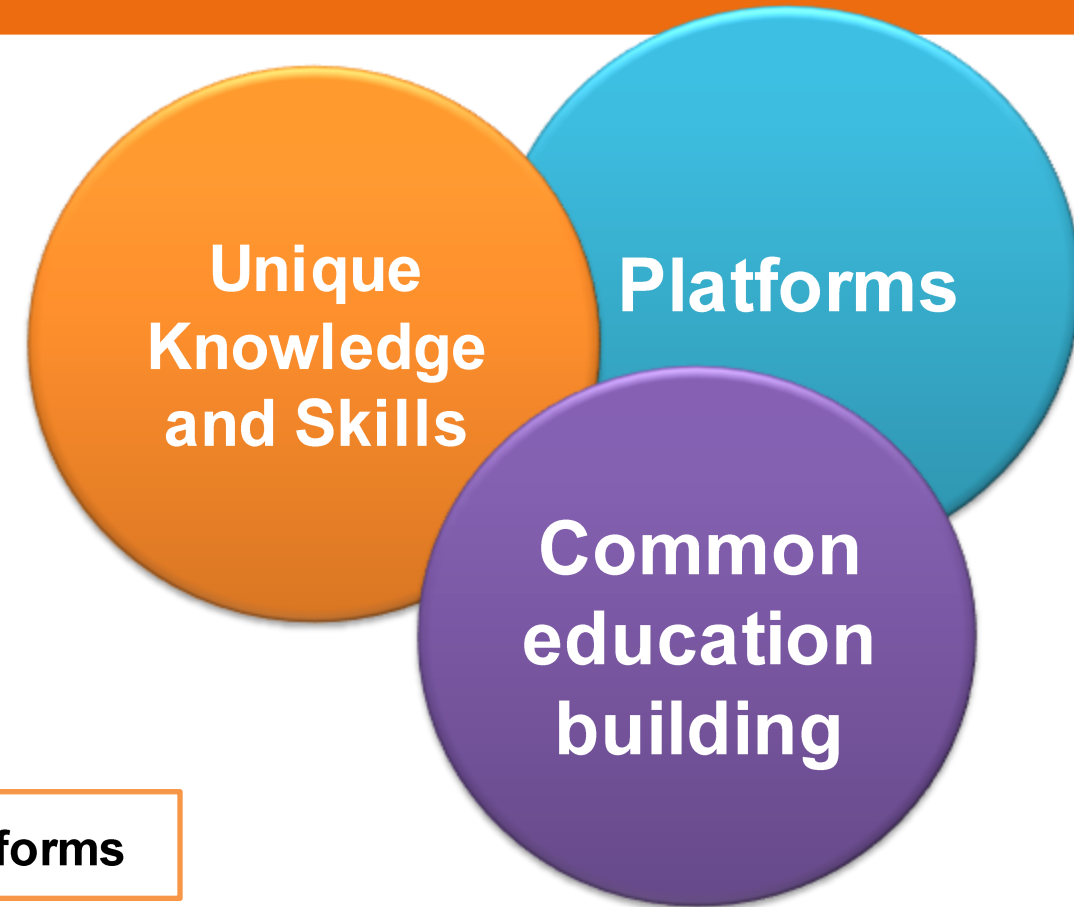
Moto : Education through research and for research

Go beyond existing actions – be **proactive**, identify strong impacting actions relying on the available and unique knowledge/skills in the 5 laboratories.

Common actions in common places : **education building, platforms**

Coherent efforts for a **better support for training and teaching** (funds and resources)

Put more coordinate efforts in the **outreach** to increase the attractiveness of our discipline



Unique UMR

Courtesy of C.O. Bacri



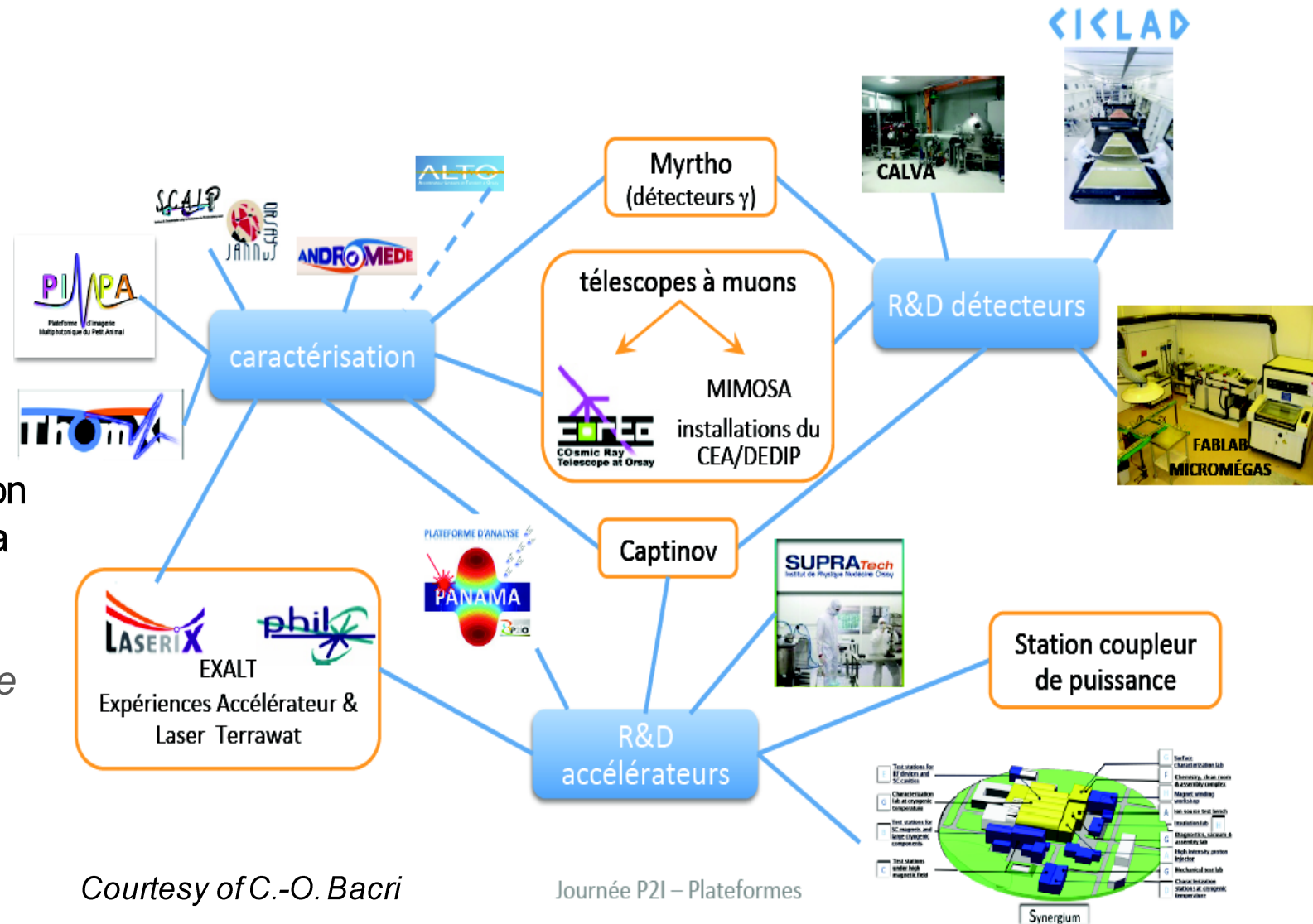
- education in the most advanced fields of our disciplines
- better coordinate the proposed training at all education levels (L to M) and increase the diversity of internships
- advanced technologies need advanced technical education (*increase efforts to create professional L3, Masters; Numerical Methods and Big Data LabWorks ...*)
- better coordinate efforts for apprentice-ship training (*20% of IT work time is already involved in training/teaching*)
- increase total PhD number and encourage engineers to supervise thesis
- better coordinate the outreach to develop the attractiveness of our disciplines (*national and international schools organization, school teacher training etc*)
- ...

Unique UMR

Platforms

➤ impressive wealth of research installation and platforms concentrated in a small area that can serve for teaching/training

(coordinate the effort to propose part of the installations to exclusive pedagogical purposes)



Courtesy of C.-O. Bacri

Journée P2I – Plateformes

(platforms in 5 labs and UPSay)

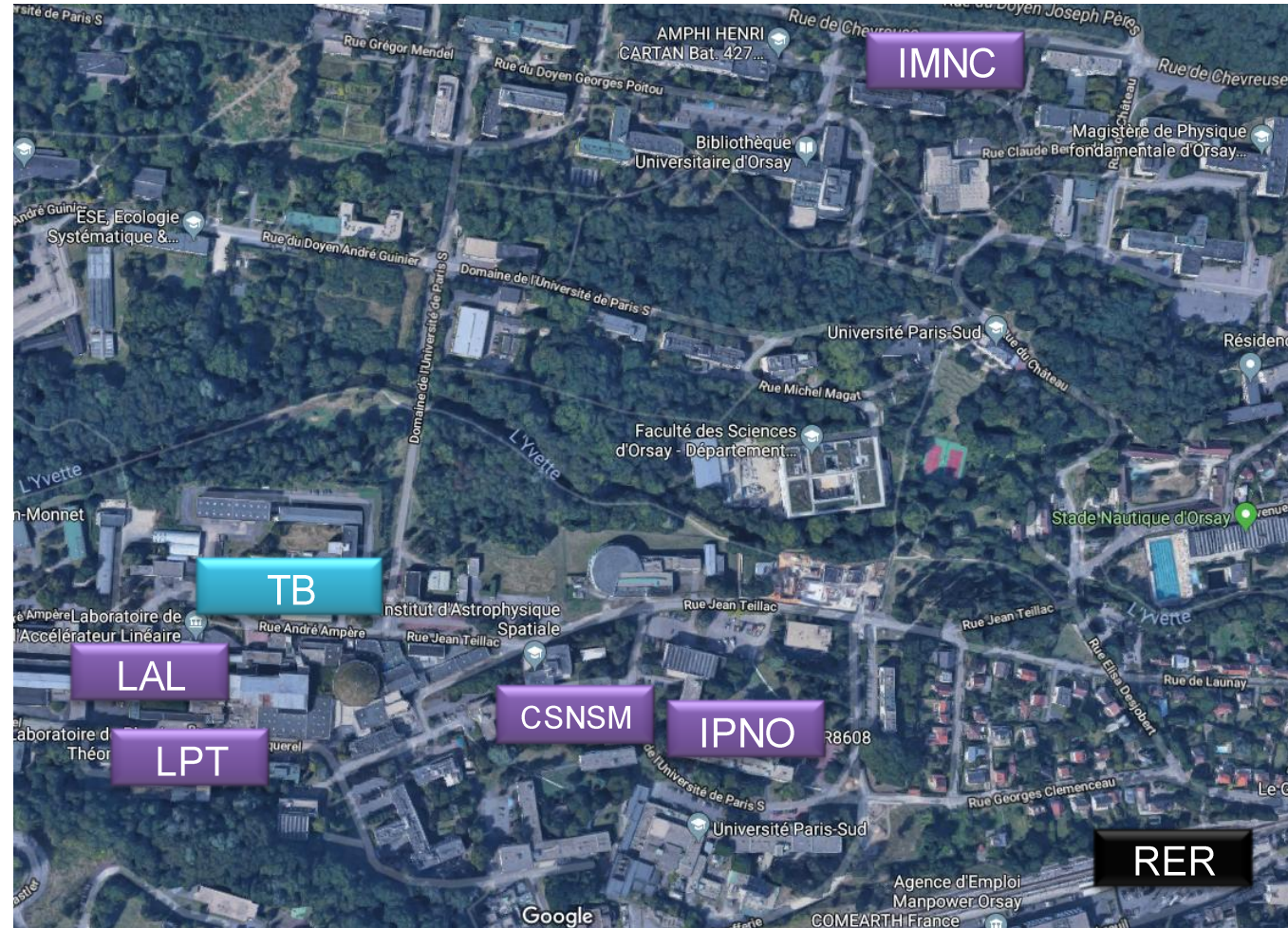
Unique UMR

Teaching Building (TB)

Close proximity with 5 labs

- privileged place for lectures/seminars
- LabWorks platform
- Amphitheatre
- place to exchange between graduate students

in the fields of the unique lab



(today schematic vue of the 5 labs)

UPSay : Future Physics Graduate School

Graduate Education & Research

Axe
recherche
P2I,
+ ED

Axe
recherche
PhOM
+ ED

Axe
recherche
Astroph.
+ ED

université
PARIS-SACLAY
DÉPARTEMENT
Physique
des deux Infinis

Master de Physique
Master Nuclear Energy

P2I

- 14 laboratories (CEA, CNRS, UPSud)
- ~1400 people, more than half in the Unique UMR (>400 researchers, > 60 EC)

Physics and Nuclear Energy Masters

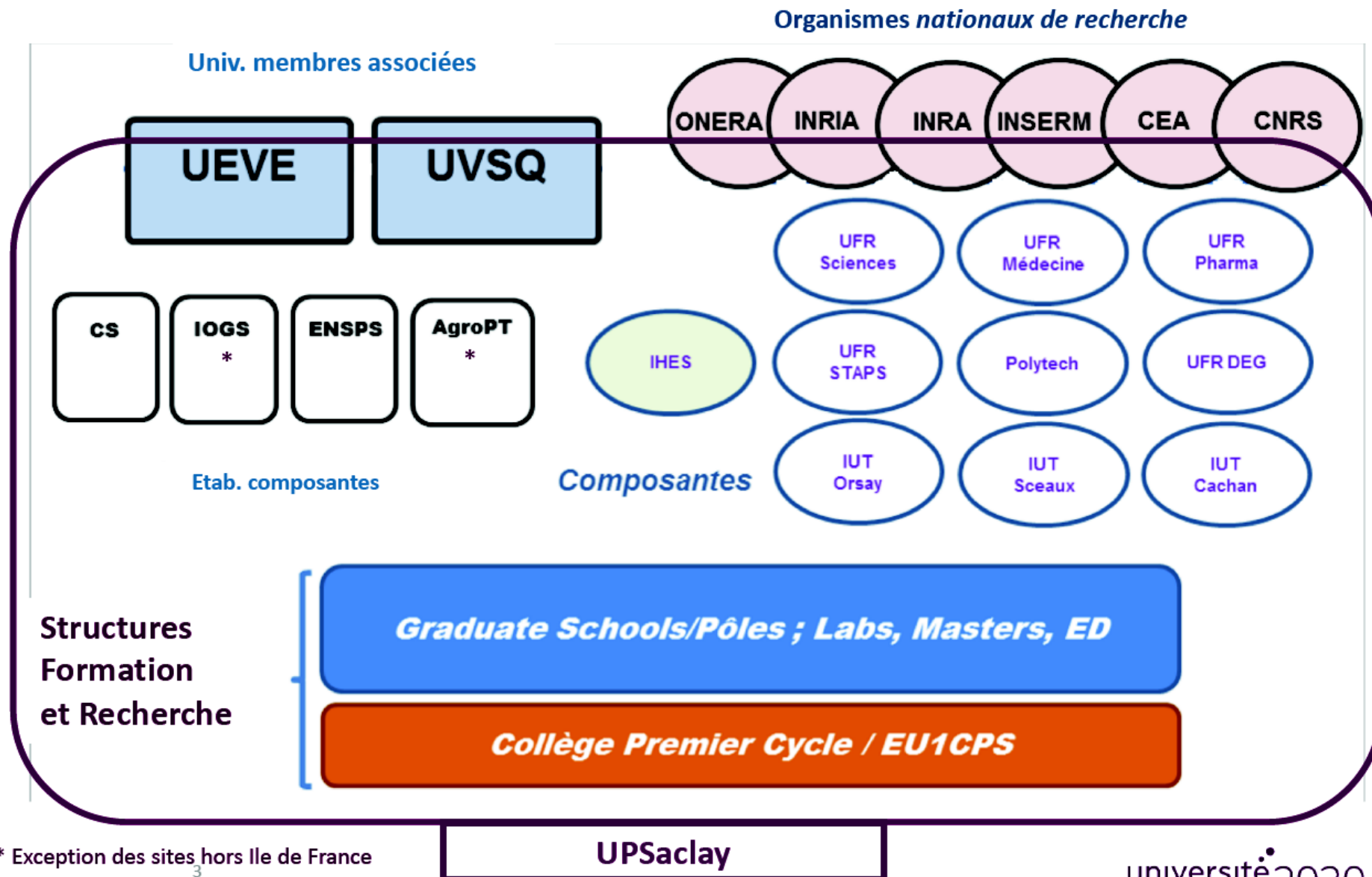
-NPAC, GI, NRPE, iCFP, ...

ED: PHENIICS

Thank you.

Backup

UPSaclay2020 : schéma général



* Exception des sites hors Ile de France

UPSaclay

PhD and HDR percentage of permanent scientific staff in different France Labs

