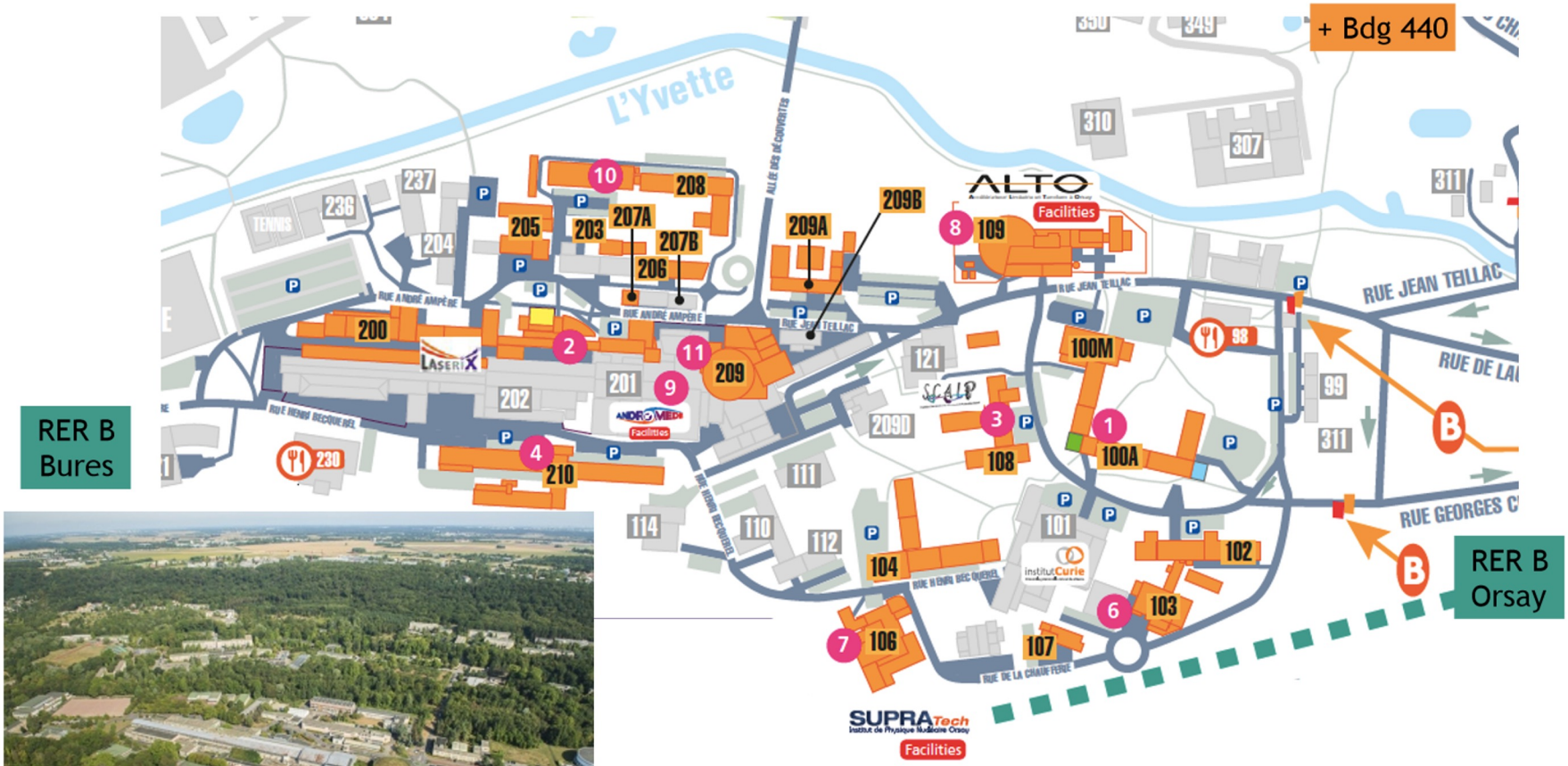
IJCLab & le pôle A2C

Octobre 2024

IJCLab: New Laboratory born in 2020 from the merger of CSNSM, IMNC, IPNO, LAL, LPT



https://www.ijclab.in2p3.fr/fr/home/


740 Membres
220 Chercheurs & Enseignants Chercheurs
Ingénieurs & Techniciens 370
4 Divisions Administratives
8 Services support


140 Doctorants & Postdoctorants
50 Bourses de Recherche Européennes & Internationales
150 Bourses de Recherche Nationales & Locales


150 Titulaires de HDR


600 Articles dans des revues internationales


7 Pôle Scientifiques

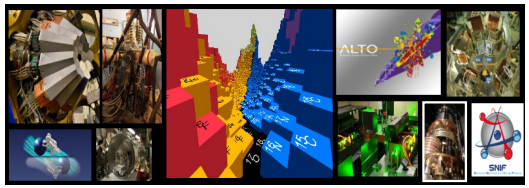

1 Pôle Ingénierie
4 Départements


5 Plateformes de Recherche


3 Plateformes Techniques


50000 m² de bâtiments
dont 20000 m² Ateliers & Infrastructures de Recherche

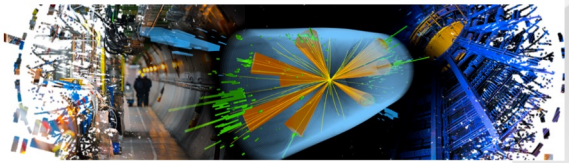
PHYSIQUE NUCLÉAIRE NUCLEAR PHYSICS ~ 71



A2C Astroparticles, Astrophysics & Cosmology ~ 64

Accelerator Physics ~ 87 (incl. IT)

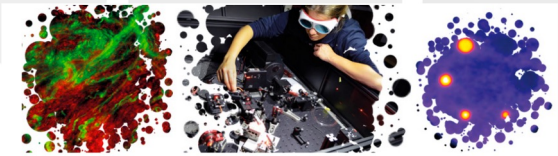
PHE Physique des Hautes Energies High Energy Physics ~ 107



Théorie ~ 52

Energie et Environnement ~ 40

Santé ~ 23



IJCLab Irène Joliot-Curie Laboratoire de Physique des 2 Infinis

1 Pôle Ingénierie **4 Départements**

~ 180 personnes

Mécanique

- Bureau d'études
- Réalisations et montages mécaniques

700 m^2 d'atelier
- 11 Tours et Fraiseuses conventionnels + 2 tours CN
- 5 fraiseuses - 1 imprimante 3D + tôlerie + contrôle

Informatique

- Développement
- Exploitation
- On-line

Virtual Data datacenter
51 racks (2000 servers)
up to 600kW

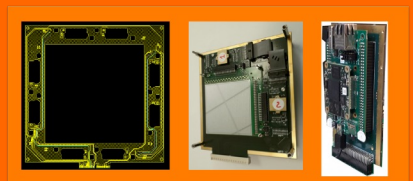
Détecteurs et Instrumentation

- Détecteurs de particules
- Détecteurs cryogénique

et instrumentation associée

Electronique

- Dev. analogiques et micro-électronique
- Syst. numériques et acquisition
- CAO prototypage-réalisation



Electronique bas bruit pour détecteur Si à pistes

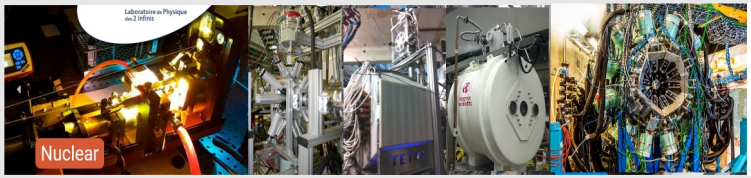
Plateformes à IJCLab

ALTO
Accélérateur Linéaire et Tandem à Orsay

The **ALTO** platform with two accelerators unique in France :

- **15 MV Tandem type electrostatic** accelerator for accelerating stable beams from proton to aggregates
- **electron linear accelerator for producing radioactive beams by photofission**.

10 physics lines (nuclear physics, astrophysics and multidisciplinary studies…), 4000 hours/year, 30 experiments/ year.



SCALP
Synthesis & Characterization using ion AccoLerators for Pluridisciplinary research

Andromede : **multidisciplinary platform, unique in the range of beams of several MeVs delivered**: protons, multicharged atomic ions, gold molecules and nanoparticles. Including an "ion source" R&D activity. It is equipped with two beam lines (90° and 1°29). **JANNuS-SCALP** : interdisciplinary platform for fields ranging from materials sciences to astrophysics, including geology and nuclear physics. **Different equipments for ion irradiation / implantation and analysis . C**oupling of Transmission Electron Microscope with ARAMIS and IRMA lines unique in the world due to the diversity of elements and energies accelerated in situ inside the MET.

SUPRATECH platform dedicated **to R&D on the superconducting cavities** of the future high-energy, high-power particle accelerators. Equipment to prepare, package, assemble and test superconducting RF cavities for IJCLab projects.

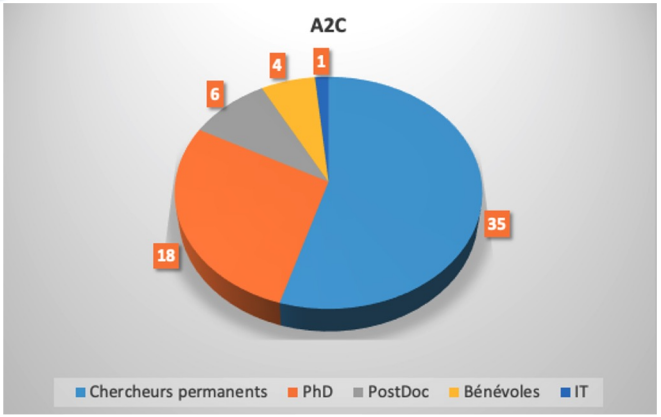
LASERIX : laser platform providing **coherent, intense and brief** (50fs to 10 ps) **sources in the near-infrared** (800 nm) **and EUV** (30 to 90 eV) domains. Will be completed including the electron photo-injector (PHIL).

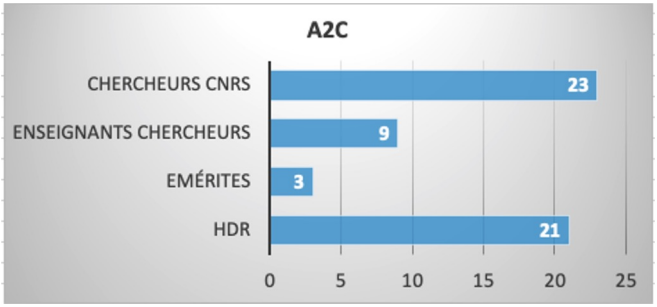
A2C Astroparticles, Astrophysics & Cosmology

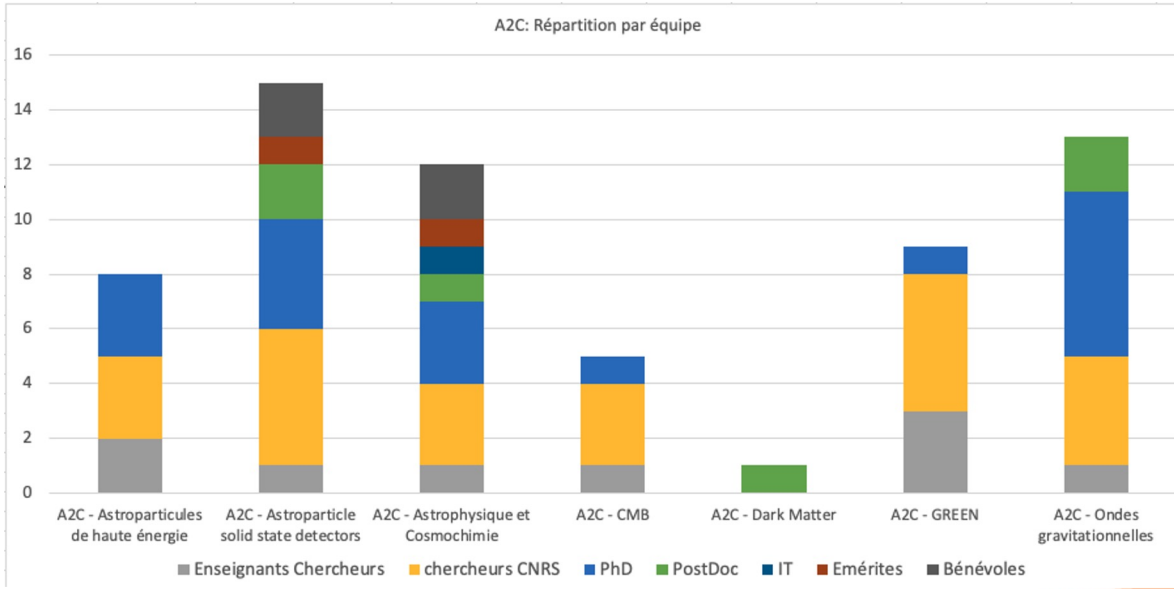
Who are we ?

A few numbers:

- 64 persons, among which 38% are PhD+Postdoc
- 1/3 of the permanent staff is university staff
- 65% of the permanent staff have their HDR







Science et Equipes

Les thématiques du pôle sont couvertes par **6 équipes**

Les phénomènes violents dans l'Univers

- Formation du système solaire et astronomie gamma au MeV
- Rayons cosmiques et gamma de très hautes énergies
- Ondes gravitationnelles et astronomie multi-messagers

AC : Astrophysique et cosmochimie
APHE : Astroparticules de Hautes Energies
OG : Ondes gravitationnelles

La matière noire et la nature des neutrinos

- La nature des neutrinos
- Recherche directe de matière noire
- R&D associée

ASSD : Astroparticles Solid State Detectors

Cosmologie

- Physique de l'Univers primordial
- Etude des grandes structures via les grands surveys

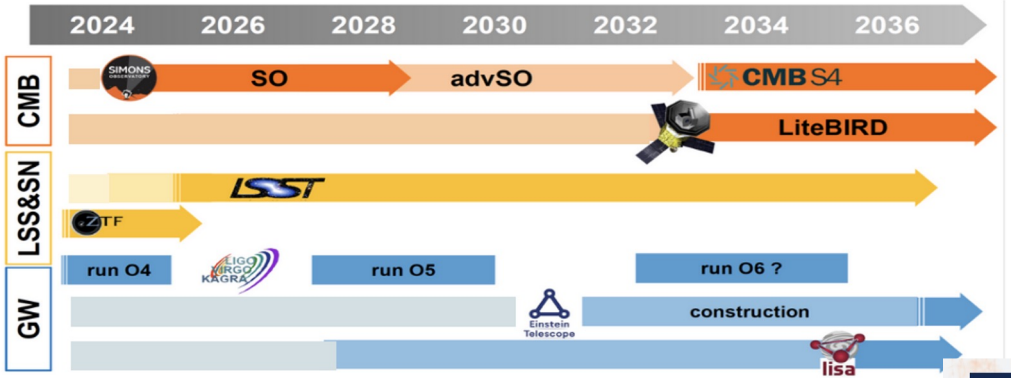
CMB : Fond diffus cosmologique
LSST : Energie noire

Thematics & Projects in A2C

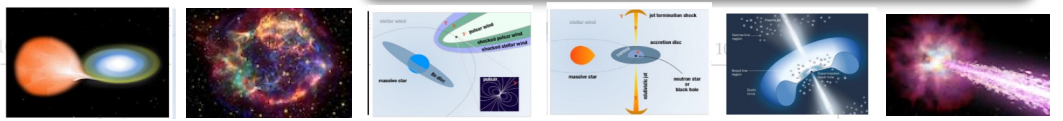
Cosmology

The science topics in which the IJCLab's teams are involved :

> inflation & reheating
> dark energy
> test of (modified) gravity
> neutrino physics

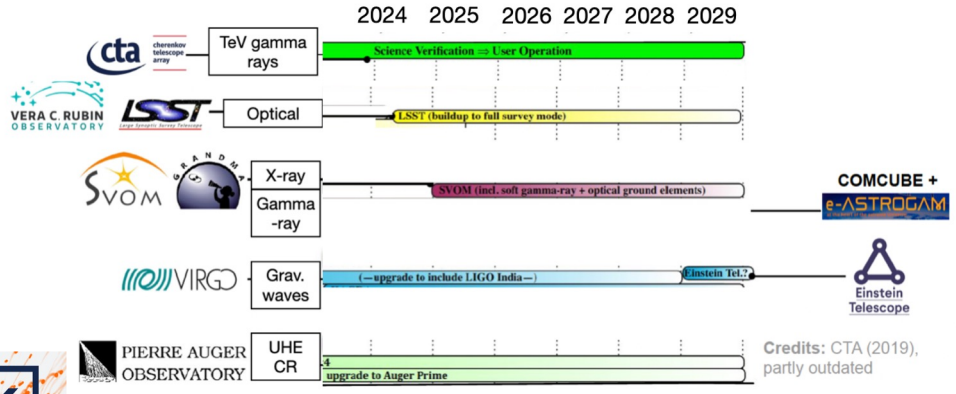


Compact objects



(Recurrent) nova | Supernova | X-ray binary | Microquasar | Active galactic nuclei | Gamma-ray burst

+ tests of fundamental physics



FUNK

Origins of the Solar System

Return sample analysis (Hayabusa2, IJCLab collection of micro-meteorites..)