

Expression of interest of LAL, Orsay to join the RD51 collaboration



Laboratoire de l'Accélérateur Linéaire (LAL) (IN2P3/CNRS and Paris Sud University)

www.lal.in2p3.fr

Located at the Paris Sud University campus between Orsay and Bures-sur-Yvette

Historical name: big linear e+e- accelerator was stopped in 2004.

Instead smaller new facility, PHotoInjector PHIL at LAL, for the R&D has been built.

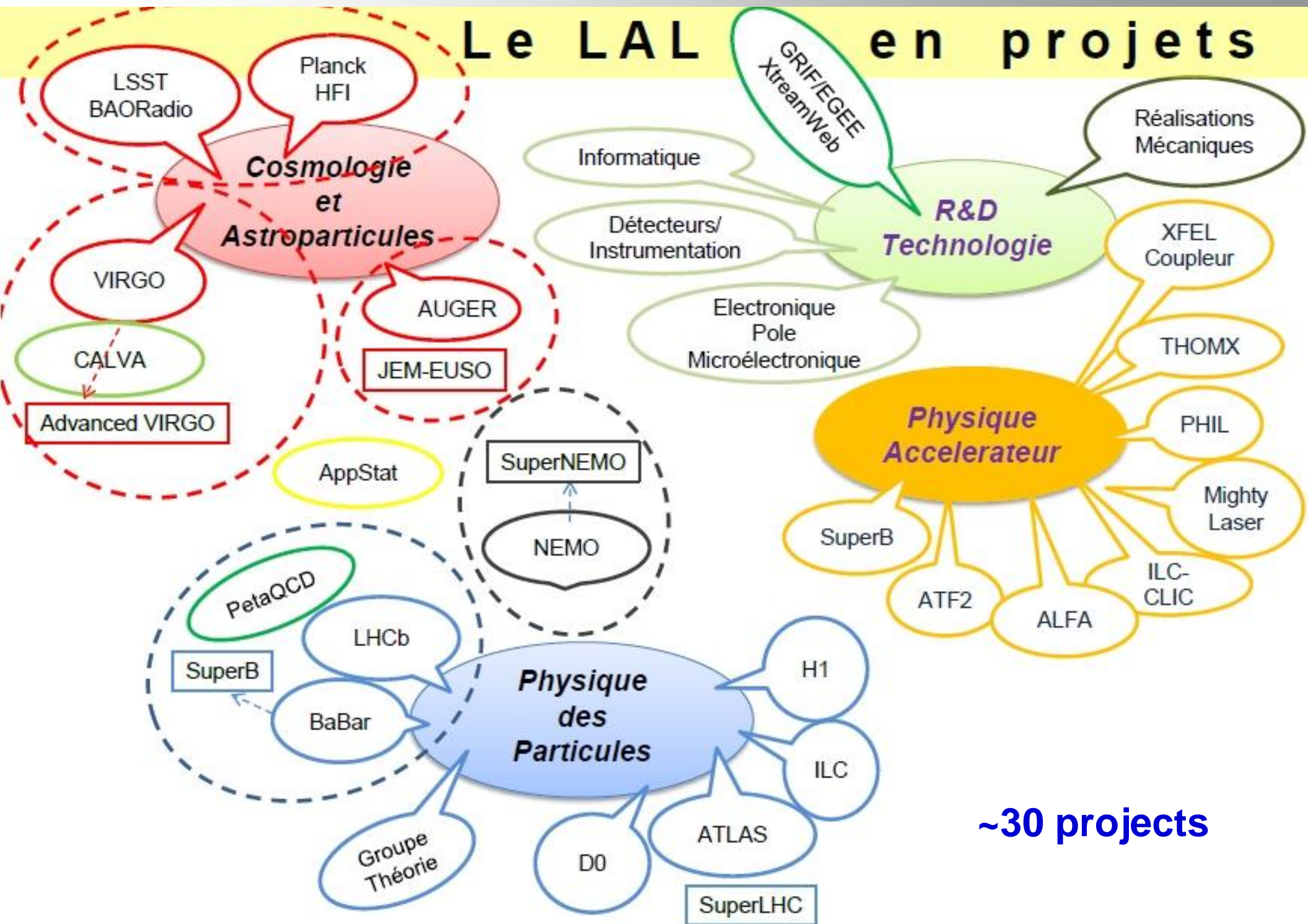


- ❑ **Biggest CNRS HEP laboratory in France:**
 - ~120 physicists
 - ~220 engineers/technicians
 - Annual budget (besides salaries):**
 - ~8 ME

- ❑ **Hosting ~10 PhD thesis / year**

- ❑ **Surface of 18 000 m², including 7 000 m² of halls, workshops and clean rooms**

Le LAL en projets



~30 projects

Gaseous detectors related activities

- ❑ Strong expertise on gaseous detectors (group ILC TPC by Vincent Lepeltier) until 2007
- ❑ Now re-establishing gaseous detectors activities at LAL via
 - ❑ Joint activities on Micromegas/InGrid simulation and tests
with CEA/IRFU and Kiev University
 - ❑ Development of the multi-purpose test facilities
 - ❑ New flexible facility using low energy electrons from the photoinjector PHIL at LAL proposed for the InGrid R&D
 - ❑ Construction of the CORTO test facility: cosmic muon hodoscope with precise muon track reconstruction
- ❑ Involvement of SERDI: service of the R&D instrumentation and electronics
- ❑ Involvement of the accelerator department for the construction of facility at PHIL

Example: versatile facility at PHIL,

spectrometer to sample “monochromatic” low energy electrons (positrons)

Goal: obtain samples of “monochromatic” electrons (positrons) with adjustable intensity and with adjustable energy between few 100 keV and 5 MeV and energy spread <10%

Test Bench

Driving application: **Micromegas/InGrid R&D**

Physics measurements

Non-relativistic electron (positron) energy losses with Micromegas/TIMEPIX

Students' hands-on

Principle:

Use electrons provided by PHIL

Momentum 5-8 MeV/c and up to 10^{10} particles per bunch.

Timing: laser pulse with 7 ps FWHM

Reduce/smear energy/intensity using Al plug (W plug for lower intensity positron samples)

Select unique direction for electrons passing the plug with collimator set

Select required energy by **half-turn of electron in the magnetic field** (field value)

Adjust intensity/energy spread using another collimator set in front of tested detector

Simulation proved the principle

- ❑ The **LAL group** interested to join RD51

comprises physicists and detector and electronics engineers:

Oleg Bezshyyko

Dominique Breton

Leonid Burmistrov

Patrick Cornebise

Nicoleta Dinu

Oleksiy Fedorchuk

Abdenour Lounis

Veronique Puill

Achille Stocchi

François Wicek

Sergey Barsuk

- ❑ The group participates in joint developments with CEA/IRFU and Kiev University

- ❑ Field of interest in the framework of the RD51:

Micromegas/InGrid technology detector R&D and simulation