



## KEY TECHNOLOGIES

# Sensors, Electronics, and Instrumentation

### HUMAN POTENTIAL

The team has 40 people, including 29 research scientists (professors, senior lecturers, CNRS researchers), 5 doctoral candidates and 6 technicians, i.e., roughly 30 people full-time.

### EQUIPMENT

A range of instrument for the, modelling, design and characterisation of instrument sensors are available

- Photolithography machines and thin film deposit equipment
- Radiation detectors, optical sensors, and magnetic sensors
- Laser equipment (ranging from infrared to ultraviolet)
- Shielded magnetic chamber
- Machines for measuring at variable temperature (77K - 400K)
- Spectrum analyser (from continuous spectrum to 9 GHz)
- Pulse measurement chains
- Various electronic measuring devices
- Process simulators
- Simulation software per finished component

**Key words:** *sensors, instrumentation, control*

► **In the field of sensors:** an advanced technology for the control of superconductor sensors whose sensitivity is far greater than ordinary sensors

A broad spectrum of measuring methods (optic, nuclear, electronic, and other measuring methods)

Multidisciplinary skills and expertise, meaning that measurements can be crosschecked for increased certainty.

► **In the field of instrumentation:** Skills and expertise in fast pulsed electronics (stemming from the measurement techniques used for charged particles) can be transposed to improve broadband transmissions required by network techniques.

► **In the field of control:** 'software sensors' that can enable the modelling of technical processes and the measurement of magnitudes, which cannot be done by direct measurement methods.



LPC: Laboratoire de Physique Corpusculaire

## METHODS

The complementary skills and expertise of four laboratories are deployed. The laboratories are:

- The **GREYC (Groupe de Recherche en Informatique, Image et Instrumentation)**: highly sensitive electronics, instrumentation, and imaging [www.info.unicaen.fr/GREYC/](http://www.info.unicaen.fr/GREYC/)
- The **LAP (Laboratoire d'Automatique des Procédés)**: process modelling and control <http://caeinfo.in2p3.fr>
- The **LPC (Laboratoire de Physique Corpusculaire)**: radiation sensors, particle sensors and instrumentation [www.greyc.ismra.fr/LAP/](http://www.greyc.ismra.fr/LAP/)
- The **CIRIL (Centre Interdisciplinaire de Recherche Ions Lasers)**: sensors and optic instrumentation, and laser [www.ganil.fr/ciril](http://www.ganil.fr/ciril)

## SUPPORT TO BUSINESS SET-UP PROJECTS IN BASSE NORMANDIE

The Basse Normandie Region has rolled out all its resources to support business projects in the following areas:

- ▶ General funding
- ▶ Business project support
- ▶ Training programs
- ▶ Corporate user services at operations site
- ▶ Technology transfer to companies: [www.gravir.org](http://www.gravir.org) et [www.rdt-bn.org](http://www.rdt-bn.org)

## CONTACTS

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Browse our website to find out all about the many opportunities in Normandy, at [www.normandydev.com](http://www.normandydev.com) or send an email to [ndcaen@normandydev.com](mailto:ndcaen@normandydev.com) or [ndrouen@normandydev.com](mailto:ndrouen@normandydev.com)

## COMMITTED COMPANIES...

- ▶ **PHILIPS COMPOSANTS** (noise and fine characterisation of components and integrated circuits) - <http://www.semiconductors.philips.com/>
- ▶ **ELDIM** (optic measurements) - <http://www.eldim.fr>
- ▶ **COGEMA** (nuclear fuel production and processing) - [http://www.cogema.fr/cogema/fr/fs\\_accueil.htm](http://www.cogema.fr/cogema/fr/fs_accueil.htm)
- ▶ **CEA** (applications in nuclear technologies, and non destructive testing) - <http://www.cea.fr/>
- ▶ **DIGICONCEPT** (electronic equipment) - <http://www.digiconcept.com>
- ▶ **QUANTAFLOW** (counting systems and high precision systems for people-flow traceability) - <http://www.quantaflow.com>
- ▶ **OPTICALL** (telephone operator) - <http://www.otpicall.be>
- ▶ **CHAUVIN ARNOUX** (manufacturer of measuring instruments)  
etc...

## ACHIEVEMENTS

Industrial applications can be broken down into three main areas

- ▶ Medical applications
- ▶ Non destructive testing
- ▶ The optimisation of process control

