THE PICOSEC MC-NET PROJECT

The PicoSEC MC-NET project in short:

Numbers:

11 partners
7 Academia
4 Companies
6 European Countries
22 Researchers:
18 Early Stage Researchers
4 Experienced Researchers

Goal:

Training on development of a new class of **ultra-fast photon detectors** to be used in **PET** (positron emission tomography) and **high energy physics**.

Features:

Training network
Multidisciplinarity
Cross-sector collaboration
Recent graduates
Technological development in many fields

What is PicoSEC?

PicoSEC (Pico-second Silicon photomultiplier Electronics & Crystal research) is a Marie Curie Initial Training Network **for recent graduates** that develops **a new class of ultra-fast photon detectors** to be used in **PET** (positron emission tomography) and **high energy physics**.

The core activities of the project are:

1. to improve the TOF-PET (Time Of Flight PET) technology for clinical applications: this will open up new avenues in medical imaging and in the quality of patient treatment.

2. to develop new detectors for particle physics experiments at future accelerators, to cope with new demands on luminosity pushed to new limits beyond the existing LHC.

Who are the Researchers?

The PicoSEC researchers are not just from Europe - France, Hungary, Italy, Poland, Portugal, Spain - but from around the world, including China and India.

What does PicoSEC *look like*?

A training project. PicoSEC is an exciting training project, bringing together recent graduates and international experts to take part in a multidisciplinary training program.

Internationality and collaboration between public and private sectors in Europe. PicoSEC comprises 7 public organizations and 4 private companies, each working on a common research program, exchanging skills and increasing collaboration among different institutions and across sectors.

This research project is supported by a **Marie Curie Early Initial Training Network** Fellowship of the European Community's Seventh Framework Programme under contract number (PITN-GA-2011-289355-PicoSEC-MCNet)

Multidisciplinarity. PicoSEC's research and development projects encompass several disciplines in photon detection and involve a wide spectrum of technologies in various fields: physics, optics, scintillating crystals, microelectronics, mechanical engineering, simulation tools, data acquisition and signal processing. With such range of technologies, a multidisciplinary approach is necessary.

Teamwork and collaboration. The success of PicoSEC relies heavily on the active involvement of all the partners. The researchers will be exposed to a state-of-the-art environment that builds on close international collaborations with European universities, research institutes and high-tech industry. They will move around the Network receiving training with both the academic and the industrial partners. Specific tailor-made training events also give the researchers the opportunity to network among themselves.

The Work Packages

WP1 Scintillators and Optics for fast timing
WP2 Photodetectors for fast timing
WP3 Electronics and Data Acquisition
WP4 Detector Integration and Prototyping
WP5 Image Reconstruction, Tracking-Navigation, Hardware and Software

WP6 Training
WP7 Consortium and Project Management
WP8 Dissemination and Outreach

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More information available from: **www.cern.ch/picosec**

The PicoSEC Network

1. **CERN**, European Organization for Nuclear Research (Geneva, Switzerland)
2. **DESY**, Stiftung Deutsches Electronen-Synchrotron (Hamburg, Germany)
3. **FiberCryst** SAS (Villeurbanne, France)
4. **Kloé** SA (Montpellier, France)
5. **LIP**, Laboratório de Instrumentação e Física Experimental de Particulas (Lisbon, Portugal)
6. **ST Microelectronics** s.r.l. (Catania, Italy)
7. **SurgicEye** GmbH (Munich, Germany)
8. **TU-Delft**, Technical University of Delft (Netherlands)
9. **TUM**, Technische Univ. München (Germany)
10. **UHEI**, Ruprecht-Karls-Universität Heidelberg (Germany)
11. **UniMIB**, Università degli Studi di Milano Bicocca (Italy)