

# A new experience in clustering teams of physicists: *Triangle de la Physique* in the south of Paris

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## an Advanced Research Cluster in Physics

from basic to applied (*optics, lasers, nanosciences, condensed matter, statistical physics, complexity...*) of more than **1000 permanent physicists** (researchers, professors and engineers...) attached to **40 laboratories**.

### Our goals

- Improve the **international global visibility and attractiveness** of a critical number of expert and recognized physicists working on top level equipment, gathered on a restricted geographic area (south of Paris) but belonging to different science organizations, universities and engineering schools;
- Create a new dynamics among the scientific population to **generate ambitious and innovative projects**, transgressing the administrative affiliations;
- Promote a world-wide recognized **scientific label**.

### Our tools

#### To foster international attractiveness:

- grants for consolidated **senior chairs**  
**S. Svensson**, 2007, University of Uppsala, Sweden  
**Lev Ioffe**, 2007, Rutgers University, USA  
**Jörg Wrachtrup**, 2008, University of Stuttgart, Germany  
**Léon Sanche**, 2009, University of Sherbrooke, Canada
- grants for welcoming visiting foreign professors and researchers, as well as post-doctoral (about and Ph.D. positions)
- support for sabbatical visits of French staff and of students into foreign labs

#### To promote emerging novel research themes:

- grants for consolidated **junior chairs** with equipment and running costs  
**Corinna Kollath**, 2007; **Laurie Calvet**, 2008; **Viatcheslav Kokoouline**, 2008; **Andrea Fioretti**, 2009; **Mikhail Zvonarev**, 2009
- support for hiring dedicated post-docs (57 in 3 years) and Ph. D. students

#### To upgrade the common scientific and technical substrate of equipment:

- finance priority common equipment for experiments and computing, to be shared by several users  
**Appeal** (2007), **FemtoArpes** (2008), **Frachet** (2009)

#### To encourage diffusion towards the socio-economical neighbourhood:

- select and promote a few proposals for transfer of technology, for innovation in education and teaching

### Our scientific themes

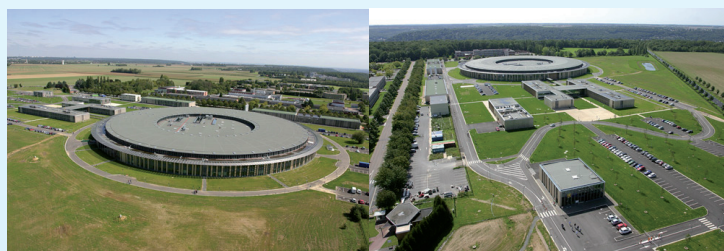
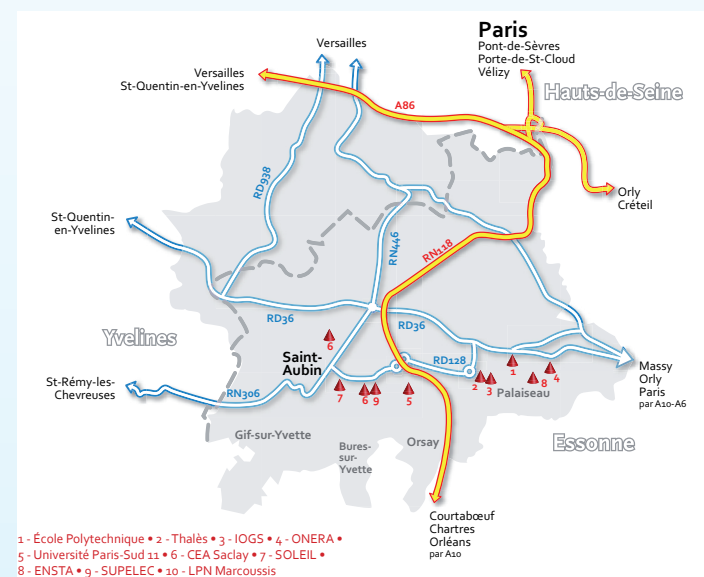
#### Federative Themes...

- Coherence and quantum entanglement: from atoms to mesoscopic systems
- Matter out of equilibrium: from molecules to nanoparticles
- Complex matter: systems, materials and dynamics
- Strongly correlated materials
- Spintronics
- Extreme light pole
- Nanophotonics

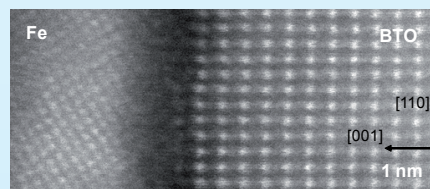
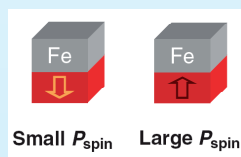
#### ... relying on a common substrate of:

- Instrumentation at its limits
- Theory from statistical physics to ab initio modelization
- Synthesis of new objects for study
- Innovation and transfer of technology

Our founders:



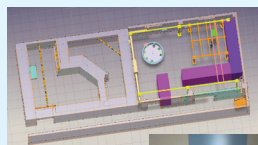
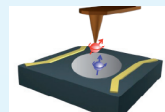
Synchrotron SOLEIL



Scheme of electrical control of spin polarization at a Fe/BaTiO<sub>3</sub> interface and atomically resolved image of its structure  
*OxiSpintronics project 2008, see Ferroelectric control of spin polarization by V. Garcia et al. Science 327 (2010) 1106*

Magnetic probe using the echo of spin of a center colored in a nanocrystal of diamond

*B-Diamant project, 2008 Senior Chair J. Wrachtrup*



A targeted joint project to promote the use in physics, chemistry and biology, of short electron pulses generated by ultra-short laser beams. Perform advanced experiments in radiolysis and in radiotherapy.

*Appeal project, 2007*

<http://www.triangledelaphysique.com>  
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Our partners: