

2009 CALLS FOR PROPOSALS Founded Projects

| Major Topic | Action | Description | Labs | Funding k€ |
|-------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------|
| Nano-characterization | Chair of Excellence * John Kirtley * Part time | Nanocharacterization of Superconducting Nanostructures John R. Kirtley, one of the world's leading experts on Josephson junction devices and superconductivity, will join this project aimed at the study of the physical properties of high quality superconducting films and their integration into quantum nano-devices. Epitaxial superconducting films will be grown by MBE and characterized at the nanoscale at room temperature as well as at very low temperature. The epitaxial trilayers will be patterned into phase qubits. Novel nanoSQUID microscopy techniques will be employed to image the high quality circuits. | Inst. Néel SIMAP INAC | 350 |
| Nanophotonics | Chair of Excellence * Yong Zhang * Part time | II-VI Photovoltaics: New concepts solar cells with II-VI semiconductor nanostructures Yong Zhang is an expert in both optical spectroscopy and electronic structure computation, and is involved in optoelectronic applications of materials (e.g., solar cell, solid state lighting, thermoelectrics). The goal of the project is to validate and combine new ideas for solar cells along three axis: 1/Type II band alignment at the interfaces, 2/1D architecture, using arrays of II-VI wires, 3/Direct band gap II-VI semiconductors. It will be done by exploring a new class of photovoltaic cells, based on core/shell nanowires architecture with type II band alignment such as ZnO/CdTe and ZnTe/CdSe. | Inst.Néel LETI LTM | 300 |
| Nanomodeling | Chair of Excellence * Normand Mousseau * Part time | MUSCADE: Multi-scale Design of Nano-materials with simulations on hybrid architectures The core of this project is the true integration of Professor Normand Mousseau from the Université de Montréal into a local organization regrouping both physicists and computer scientists belonging to all the 4 institutions in Grenoble, CNRS, CEA, INPG and UJF, and working on condensed matter and nanostructures. Through the study of three prototype systems motivated by the experimental community, multiscale simulations are expected to advance our fundamental understanding of the key issues governing the formation and stability of semiconducting quantum dots, silicon nanowires and graphene sheets. | INAC SIMAP Inst.Néel LIG LETI | 280 |
| Nanomaterials | RTRA project | PERCEVAL: Phase transformation and small scale effect: study of materials for phase change random access memories (PC RAM) The main target of the project is the study of the effect of reducing dimensions on phase transitions in new materials candidate for PCRAM. Special focus will be made on the effect of scaling on the variability of material composition in an array, the variation of melting temperature and the shift in crystallization. The studied materials will be Ge ₂ Sb ₂ Te ₅ , GeTe and GeSb ₆ . Ge ₂ Sb ₂ Te ₅ (GST) is considered as a reference materials. | LETI INAC LMGP LTM | 280 |
| Nanomagnetism | RTRA project | MIDWEST: Magnetic Microscopies for the detailed study of the interaction between magnetic Domain Walls and Spin-Polarized currents The objective is to establish a local platform for magnetic imaging particularly suited for current-induced domain wall motion, which will be unique in France and even worldwide, to be able to address the open questions in the field and produce ground-breaking results in the coming years in this competitive and fast-moving field. | Inst.Néel INAC SPINTEC | 250 |
| Quantum Nanoelectronics | RTRA project | TRANSPIN: Coherent transport of a single electron spin The goal of this project is to realize coherent transport of a single electron spin in a scalable condensed matter system (lateral quantum dots defined in a GaAs heterostructure). The realization of teleportation of a single electron spin will open new possibilities to the field of Quantum Information and is an essential step towards coherent control of a large number of Q-Bits. | Inst.Néel IMEP TIMA | 230 |
| TOTAL (k€) | | | | 1 690 |

2009 CALLS FOR PROPOSALS Support to Nanotechnology Platforms

| Platform | Equipment | Funding (k€) |
|--------------------------------|-------------------------------------|--------------|
| PTA & CIME | Operating expenses | 250 |
| | High temperature LP CVD system | 220 |
| NanoBio | Mass spectroscopy for bio-molecules | 150 |
| NanoFab | Silanisation system | 120 |
| TOTAL (k€) | | 740 |

Support to Education and Scientific Animation

| Major topics | Name | Place | Dates | Funding (k€) |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------|------------------------------------------------------------|--------------|
| SCHOOLS | | | | |
| Life sciences, nanomaterials, quantum nanoelectronics, etc | ESONN'09 | Grenoble | 2009, August 23 rd - September 12 th | 25 |
| Nanocharaterization | 10ème Hercules Specialized Courses | Grenoble | 2009, May 18 th - 22 nd | 5 |
| Life sciences, Nanomaterials | Sciences de la Miniaturisation et Biologie | Grenoble | 2009, June 8 th - 12 th | 5 |
| Quantum nanoelectronics | MIGAS'09"SOI" | Autrans | 2009, June 20 th - 26 th | 2 |
| COLLOQUES and SEMINARS | | | | |
| Quantum nanoelectronics | Séminaires de Nanoélectronique Quantique | Grenoble | weekly | 6,5 |
| Nanomaterials, quantum nanoelectronics | 4ème Colloque GDR «Nanofils, nanotubes, semiconducteurs» | Autrans | 2009, June 30 th - July 3 rd | 2 |
| Nanomaterials, quantum nanoelectronics | 2 ^{ème} Workshop France-Chine «Quantum Information and Spintronics with Semiconductors» | Grenoble | 2009, October 11 th - 16 th | 2 |
| Nanomaterials, quantum nanoelectronics | Colloque entre l'Université du Texas & l'Université Joseph Fourier | Autrans | 2009, October 14 th - 16 th | 2 |
| Nanomagnétisme | Séminaire Daniel Dautreppe | Biviers | 16 - 20 Novembre | 2 |
| TOTAL (k€) | | | | 51,5 |