

Name of the Partnering Organization:	Commissariat à l'Energie Atomique et aux Energies Alternatives		
Location (town, country):	Gif-sur-Yvette, France		
Web site address:	<a href="http://iramis.cea.fr/drecam/spec/Pres/Quantro/static/">http://iramis.cea.fr/drecam/spec/Pres/Quantro/static/</a>		
<b>Brief description of the organization</b>			
<p><a href="#">IRAMIS (Saclay Institute for Radiation and Matter)</a>, is a Fundamental Research Institute belonging to the <a href="#">Direction des Sciences de la Matière (DSM)</a> of the <a href="#">Commissariat à l'Energie Atomique (CEA)</a>. This Institute gathers height Units or Laboratories with research programs on Condensed Matter, Atoms and Molecules. Through the topics: Nanosciences, Radiation - matter interactions, Matter and complex systems research within IRAMIS is oriented towards Health and Information Technologies (mainly nanoscience) and Energies for the Future.</p>			
<p>SPEC is the Condensed Matter Physics laboratory of IRAMIS, and also a "Unité de Recherche Associée" with the CNRS : <a href="#">URA CNRS 2464</a>. It is organized in 11 research groups, whose scientific activities are presently developing along five main directions:</p> <ol style="list-style-type: none"> <li>1. <i>Statistical physics and complex systems</i>: turbulent and granular flows, glassy dynamics, models for biological objects, collective movements and epidemiology.</li> <li>2. <i>Microscopic mechanisms</i>: superconductivity, strongly correlated electrons, multiferroic materials.</li> <li>3. <i>Quantum electronics</i>: quantum circuits, quantum coherent transport, electronic quantum noise.</li> <li>4. <i>Spin electronics</i>: influence of spin polarized currents on magnetic configurations, GMR magnetic probes.</li> <li>5. <i>Molecular electronics</i>: electronic properties of nanotubes and molecules, self-assembled devices circuits.</li> </ol>			
<b>Description of the research group</b>			
<p>The Quantronics group consist of seven permanent researchers and two technicians, and typically six to eight students and postdocs. It has performed important contributions in the fields of:  Charging effects in normal and superconducting systems.  Mesoscopic proximity effect, spectroscopic measurements on diffusive systems and on carbon nanotubes.  Transport in superconducting atomic contacts.  Coulomb interactions and Kondo effect in thin films, with measurements of electronic distribution functions in out-of-equilibrium situations.  Superconducting qubits and their coupling to microwave resonators.  The group has fabrication facilities, low temperature, low noise measurement setups, as well as microwave equipment.</p>			
<b>Selected list of relevant publications</b>			
<p><i>Measurement of the Current-Phase Relation of Superconducting Atomic Contacts</i>, M. L. Della Rocca <i>et al.</i>, Phys. Rev. Lett. <b>99</b>, 127005 (2007).</p> <p><i>Phase Controlled Superconducting Proximity Effect Probed by Tunneling Spectroscopy</i>, H. le Sueur <i>et al.</i>, Phys. Rev. Lett. <b>100</b>, 197002 (2008).</p> <p><i>Tunable Resonators for Quantum Circuits</i>, A. Palacios-Laloy <i>et al.</i>, J. Low Temp. Phys. <b>151</b>, 1034 (2008).</p> <p><i>Strong Coupling of a Spin Ensemble to a Superconducting Resonator</i>, Y. Kubo <i>et al.</i>, Phys. Rev. Lett. <b>105</b>, 140502 (2010).</p> <p><i>Andreev bound states in supercurrent-carrying carbon nanotubes revealed</i>, J-D Pillet <i>et al.</i>, Nat. Phys. <b>6</b>, 965 (2010).</p> <p><i>Evidence for Long-Lived Quasiparticles Trapped in Superconducting Point Contacts</i>, M. Zgirski <i>et al</i>, Phys. Rev. Lett. <b>106</b>, 257003 (2011).</p>			
<b>Key researcher's CV</b>			
<p><b>Cristian Urbina</b>, Condensed Matter experimental physicist, Research Director CNRS.  Awardee of the 2011 "Prix Servant" of the French academy of Science.  PhD thesis (1981) in the NMR laboratory of Prof. A. Abragam, on ordered structures of nuclear spins.  Postdoc in the laboratory of Prof. J. Clarke in Berkeley, on SQUIDs (1983-1985). After that, we founded with M. Devoret and D. Esteve, the Quantronics group at CEA, Saclay, France, where I have been working since. Areas of Expertise: quantum transport and circuits, superconductivity, Josephson devices, single electron and single Cooper pair electronics, low temperature physics, fabrication and physics of micro and nanostructures, noise and detectors, NMR.</p>			