

Horizon 2020
Marie Skłodowska Curie Actions
PROFILE FORM – Expression of Interest

Organization Name / Department	GERENCIA DE FÍSICA-GALY AAN-COMISION NACIONAL DE ENERGIA ATÓMICA	Organization Short Name CNEA	EI SANU
Organization Type	<input type="checkbox"/> University <input checked="" type="checkbox"/> Public Research Centre <input type="checkbox"/> Large Scale Enterprise <input type="checkbox"/> Small and Medium Scale Enterprise	<input type="checkbox"/> Public Body <input type="checkbox"/> International NGO <input type="checkbox"/> National NGO	
Research Fields	<input type="checkbox"/> Chemistry CHE <input type="checkbox"/> Social and Human Sciences SOC <input type="checkbox"/> Economic Sciences ECO <input type="checkbox"/> Information Science and Engineering ENG <input type="checkbox"/> Environment and Geosciences ENV <input type="checkbox"/> Life Sciences LIF <input type="checkbox"/> Mathematics MAT <input checked="" type="checkbox"/> Physics PHY	<i>Sub-Fields / Keywords:</i> PHYSICS MATERIALS SCIENCE NANOSCIENCE NEUROSCIENCE SURFACE PHYSICS CONDENSED MATTER MAGNETIC RESONANCE MEDICAL PHYSICS	
Short Description of the Organization / Department	<p>The “Gerencia de Física” (Physics Department) includes the following research groups/divisions:</p> <p>Low Temperature Physics</p> <p>Condensed Matter Theory</p> <p>Photonics and Optoelectronics</p> <p>Forensic Physics</p> <p>Magnetism and Magnetic Resonance</p> <p>Metal Physics</p> <p>Atomic, Molecular and Optical Physics</p> <p>Surface Physics</p> <p>Plasma Physics and Fusion</p> <p>Elementary Particles and High Energy Physics</p> <p>Statistical and Interdisciplinary Physics</p> <p>Medical Physics</p>		
Previous Related Projects / Research Experience	<p>Each group has a large experience in research, with well established experimental facilities. Most of researches also lecture at the Instituto Balseiro- Universidad Nacional de Cuyo, in a large number of topics in the field of physics, materials science and engineering.</p>		

Short Description of the Project idea (if foreseeable)

Low temperature Physics:

Superconductivity. Highly correlated electron systems. Microelectromechanical machines. Sensors.

Photonics and Optoelectronics Laboratory:

Cavity optomechanics. Semiconductor devices. Quantum cascade lasers. Quantum memories. Plasmonics. Ultrasensitive molecular optical detection. Biosensors. Raman spectroscopies and time-resolved spectroscopies.

Condensed Matter Theory:

Nanostructured electronic systems. Quantum transport. Strongly correlated systems. Electronic devices. Realistic modeling of materials. Statistical physics applied to disordered systems. Domain walls. Friction. Graphene. Quantum memories. Numerical techniques (Quantum Monte Carlo, Density functional theory, Density matrix renormalization group).

Magnetism and Magnetic Resonance:

Artificial Magnetic Nanostructures: Synthesis and Functionalization of nanoparticles, nanowires and nanotubes, thin films and multilayers. Bulk magnetic materials, Oxides. Medical Physics, Spintronics, Magnetic Sensors, Nuclear materials. Magnetic Resonance Spectroscopy, dc and ac Magnetometry, Magnetotransport, Magneto-optics, Scanning probe microscopy, Neutron diffraction, etc.

Metals Physics:

Mechanical Properties and TEM Microstructural Characterization. Shape Memory Alloys: bulk and thin film Cu based alloys, NiTi alloys, shape memory steels. Applications of SMA as damping materials and microactuators. Medical applications. SMA foams. Alloys for nuclear applications: mechanical properties of structural nuclear materials. Fretting damage. Light alloys: microstructural characterization of Al based alloys and Ti based alloys. Metallic nanoparticles: synthesis and microstructural characterization. Shape memory alloy preparation, single crystalline growth of Cu based shape memory alloys. Mechanical testing, Small Punch testing, Microstructural characterization with transmission electron microscopy, Electrical resistivity, Differential scanning calorimetry, Dilatometry.

Atomic, Molecular, and Optical Physics

Experimental and theoretical studies of the interaction of photons, ions, electrons, positrons, and ultrahigh-intensity light pulses with atoms and molecules

Surface Physics

Experimental and theoretical studies of the physical and chemical properties of solid surfaces and the interaction of charged and neutral particles with solid state matter

Plasma Physics and Fusion

Theoretical studies of the behavior of plasmas in the parameters (density, temperature, magnetic field) range of interest for magnetic confinement nuclear fusion

Statistical and Interdisciplinary Physics:

Theoretical and experimental research on physics in and out of equilibrium. Neuroscience: neural network dynamics and applications. Interdisciplinary physics: self-organization and emergent behaviours in complex systems.

Elementary Particles and High Energy Physics:

Astroparticle physics (both theoretical and experimental): cosmic rays, dark matter, neutrino physics. Quantum Field Theory: entanglement entropy, Casimir effect, quantum fields in curved spacetimes, field theories of condensed matter systems.

Medical Physics:

Dosimetry and Advanced Radiation Therapy for Cancer, Signal Processing and Medical Imaging, Nuclear Magnetic Resonance Spectroscopy and Imaging, Biomedical Optical Imaging and Biophotonics, Nanomedicine, Neurosciences, Biological Physics and mathematical epidemiology, Medical devices, instrumentation and detectors.

Related Call	
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