

Santiago José Carreira

Curriculum Vitae

Personal Data:

Postal address: Departamento de Materia Condensada. Centro Atómico Constituyentes. Comisión Nacional de Energía Atómica. Av. Gral Paz 1499 (1650). Partido de San Martín, Buenos Aires. Argentina.

Phone: (54-11) 6772 7103.

Place and date of birth: Buenos Aires. March 1st, 1988.

Citizenship: Argentina. **Passport number:** 33 435 477N.

E-mail: sicarreira@gmail.com / carreira@tandar.cnea.gov.ar.

Current positions:

- **PhD student in Physics.**

Granted by CONICET. PhD advisor: Dra. Laura B. Steren.

Title of PhD thesis: "Effects of interfaces and fields on the magnetic and electric properties of oxide-based devices".

Initiated: April 1st, 2013.

Keywords: Nanomagnetism, Spintronics.

- **Graduate auxiliar professor (part time).**

Science and Technical School. University of Gral. San Martín. Argentina.

General Scientific Background:

Degrees:

- **Licenciado en Ciencias Físicas.** (2007-2013)

University of Buenos Aires. Final qualification 9 (nine).

Title of master thesis: "Vortex lattice dynamics in superconducting thin films with periodic artificial pinning centers". Master advisor: Dra. Victoria Bekeris.

- **Secondary School.** (2001-2006)

E. T. N° 9 "ING. LUIS A. HUERGO" Degree: Chemical Technician.

Research papers:

Papers published in International Journals

- *Vortex pinning vs superconducting wire network: origin of periodic oscillations induced by applied magnetic fields in superconducting films with arrays of nanomagnets.* A Gomez, J del Valle , E M Gonzalez, C E Chilotte , **S J Carreira**, V Bekeris, J L Prieto, Ivan K Schuller and J L Vicent. *Supercond. Sci. Technol.* **27**, 065017 (2014) doi:10.1088/0953-2048/27/6/065017.
- *Superconducting heterostructures: from antipinning to pinning potentials.* **S J Carreira**, C Chilotte, V Bekeris, Y J Rosen, C Monton and Ivan K Schuller. *Supercond. Sci. Technol.* **27**, 085007 (2014) doi:10.1088/0953-

2048/27/8/085007.

Papers published in refereed conference proceedings

- *Proximity effects and vortex dynamics in superconducting heterostructures.* **S J Carreira**, V Bekeris, Y J Rosen, C Monton and Ivan K Schuller. *J. Phys.: Conf. Ser.* **568**, 022008 (2014) doi:10.1088/1742-6596/568/2/022008.
- *Low Temperature vortex dynamics in superconducting Nb films containing square and rectangular arrays of Ni nanodots.* C Chilliote, **S J Carreira**, V Bekeris, A Gomez, E M Gonzalez, J L Prieto y J L Vicent. *IEEE Magnetics Letters* **49** 4643-6 (2013) doi: 10.1109/TMAG.2013.2257706.

Workshops and conferences (oral contributions)

- “XVI Encuentro de Superficies y Materiales Nanoestructurados”. Buenos Aires (Argentina) from may 11th to 13th, 2016. *Comportamiento magnético de interfaces metal-aislante en manganitas.* **S J Carreira**, M. H. Aguirre, J Briático, M Sirena and L Steren.

Workshops and conferences (mural contributions)

- “27th International Conference on Low Temperature Physics”. Buenos Aires (Argentina) from august 6th to 13th, 2014. *Structural and magnetic characterization of $La_{1-x}Sr_xMnO_3$ -based thin films and multilayers, grown by pulsed laser deposition.* **S J Carreira**, J Briático, J Sinnecker, M Sirena and L Steren. (Poster).
- “XIV Encuentro Nacional de Superficies y Materiales Nanoestructurados”. San Carlos de Bariloche, Rio Negro, from may 14th to 16th, 2014. *Caracterización Magnética y Estructural de Películas Delgadas de $La_{1-x}Sr_xMnO_3$ Crecidas por Ablación Láser.* **S J Carreira**, J P Sinnecker, J Briático y L B Steren. (Poster).
- “X LAW 3M (Latin American Workshop of Magnetism and Magnetic Materials) Buenos Aires from april 8th to 12th, 2013. *Magnetic properties of ferromagnetic/ferroelectric multilayers.* **S J Carreira**, G Alejandro, L Aviles Felix, E Kaul, M Sirena y L B Steren. (Poster).
- “97° Reunión Nacional de Física de la Asociación Física Argentina”. Villa Carlos Paz, Córdoba, from september 25th to 28th, 2012. *Movilidad de vórtices en heteroestructuras superconductoras.* **S J Carreira**, C Chilliote, V Bekeris, Y Rosen y I K Schuller. (Poster).
- “International Magnetics Conference, INTERMAG 2012”. Vancouver, Canada, from may 7th to 11th, 2012. *Growth and characterization of ferromagnetic/ferroelectric multilayers for tunnel junctions.* **S J Carreira**, L Steren, L Aviles Felix, G Alejandro, E Kaul y M Sirena. (Poster).
- Meeting “*Técnicas experimentales en grandes instalaciones aplicadas a materiales magnéticos*”. Balseiro Institute. San Carlos de Bariloche, October 17th to 19, 2012. (Attendance).
- “Materials Research Society, Fall Meeting 2011, Symposium P: Ferroelectric and Multiferroic Materials”. Boston, USA, from November 28th to december

2nd, 2011. *Development of Multiferroic Tunnel Junctions: Structure, Magnetic and Transport Properties of Ferromagnetic/Ferroelectric Multilayers*. **S J Carreira**, L Steren, L Aviles Felix, F Fernandez Baldis, E Kaul, M Sirena, J Lesueur, N Bergeal, R Bernard, J Briatico, G Faini y J Villegas. (Poster).

Grants:

- PICS Level 2, CONICET-CNRS, Title : Réalisation et étude de Dispositifs Electroniques à base de Structures Fonctionnalisées d'oxydes, Fabrication and study of electronic devices based in oxides nanostructures. (2014-2016). Training in microfabrication of spintronics devices. Unite Mixte de Physique CNRS/THALES. Palaiseau, France. October 1st to november 31th, 2014. Advisor: Javier Briático.
- Bilateral agreement French-Argentinian ECOS A10E05 for a training course in thin films fabrication by pulse laser deposition technique. Unite Mixte de Physique CNRS/THALES. Palaiseau, France. September 15th to october 15th, 2013. Advisor: Javier Briático.

Schools:

- IEEE magnetic summer school. From august 10th to 16th, 2014. Centro Brasileiro de Pesquisas Físicas (CBPF), Rio de Janeiro, Brazil. (Poster).
- Escuela de Micro y Nanotecnología. "Técnicas de Micro fabricación y Caracterización de dispositivos MEMS". From may 27th to 31th, 2013. CAC-CNEA, Buenos Aires, Argentina. (Attendance).
- International School of Oxide Electronics (ISOE213as). From september 2nd to 14th, 2013. Institut d'Études Scientifiques de Cargèse, Corsica, France. (Attendance).
- JOSÉ A. BALSEIRO School 2012 "Magnetismo y Materiales Magnéticos". Balseiro Institute, Centro Atómico Bariloche. San Carlos de Bariloche, Argentina. From october 1st to 26th, 2012. Full time. Final mark 9 (nine).

PhD courses:

- Cristalografía y Difracción de rayos X. Professors: Dr. Daniel Vega and Dr. Ricardo Baggio (CNEA-CONICET). From april 1st to july 31th, 2015. Final mark 9 (nine).
- Tópicos de nanofísica: magnetismo y electrónica de nanoestructuras y dispositivos. Professor: Dra. Laura B. Steren (CONICET). Physics department, FCEyN-UBA. From april 1st to july 31th, 2015. Final mark 9 (nine).
- Nuevos desarrollos en termodinámica y física estadística. Professor: Dr. Esteban Calzetta Physics department, FCEyN-UBA. From april 1st to july 31th, 2015.

- Simulaciones Micromagnéticas. Proffesor: João Paulo Sinnecker (CBPF). Centro Atómico Consituyentes, Comisión Nacional de Energía Atómica (CAC-CNEA). From march 1st to 31th, 2015.
- Sólidos y Líquidos cuánticos. Proffesor: Dr. Henri Godfrin (Institut Néel–CNRS–Grenoble). Physics department, FCEyN-UBA. From august 1st to 31th, 2014. Final mark 9 (nine).
- Magnetismo: teoría y experimentos. Proffesor: Dra. Laura B. Steren (CONICET). Centro Atómico Consituyentes, Comisión Nacional de Energía Atómica (CAC-CNEA). From april 1st to july 31th, 2014. Final mark 9 (nine).

Technical background:

Gema Biotech S.A. (October 2006 - March 2008).
Address: Marcelo T. de Alvear 2289. Buenos Aires City. Argentina.
Chemical Technician.

Teaching activities:

Universities:

- Ciclo básico común (CBC), Cátedra de Física e introducción a la Biofísica, University of Buenos Aires. July 2011- March 2013. Undergraduate auxiliar professor of Física and Biofísica courses.
- Physics Department, Facultad de Ciencias Exactas y Naturales, University of Buenos Aires. April 2013 - April 2014. Undergraduate auxiliar professor of Laboratorio 1 (físicos) and Física 2 (biólogos y geólogos) courses.
- Physics Department, Facultad de Ciencias Exactas y Naturales, University of Buenos Aires (February - March 2015). Graduate auxiliar professor of the Estructura de la Materia 2 course.
- Physics department. Favaloro University. Ingeniería Biomédica y Física Médica (May–July 2015). "Jefe de trabajos prácticos" of the Física 4 course.
- Escuela de Ciencia y Técnica. Gral. San Martín University (UNSAM). (July 2015). Graduate auxiliar professor of the "Física 3" course.

Institutes:

- Instituto Amadeo Jacques (August 2009-November 2011):
Teached physics and mathematics of secondary and university levels.
www.institutoamadeo.com.ar/ tel.: 4 381 0711.
- Instituto Junín (2010-2011):
Teached physics, mathematics and algebra, as a complement of the "Ciclo básico común" courses (UBA). Av. San Martín 4515 1° piso, tel.: 4 502 9610.

Dissemination:

- Olimpíadas Metropolitanas de Física (FCEN, UBA) 2011-2014. Prepared exercises.
- Semana de la física 2012 and 2013 (dissemination scientific session organized by the FCEN for secondary students). Low temperatures Stand Coordinator.

Skills:

- MPMS SQUID and VSM Magnetometer.
- Magnetotransport.
- Atomic Force Microscopy.
- Pulsed Laser deposition.
- Microfabrication.

Other studies:

English (2003-2006): Instituto Ce. Li. Ar. (Intermediate Higher).

French (basic level).

Laboratorio Cero (2004): Centro Atómico Constituyentes.

Office: Word, Excel, Power Point. Autocad.

Programming: Matlab, LabView. Mathematica.