

PERSONAL INFORMATION



Carlos, Cruz de la Torre

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Sex Male | Date of birth 10/04/1977 | Nationality Spanish | Marital status Single

JOB APPLIED FOR
POSITION
PREFERRED JOB
STUDIES APPLIED FOR

Engineer. Design, specification and supervision of electronic systems. Contributing to R&D.

WORK EXPERIENCE

April 2012 - Onwards

Detector Engineer

Alba CELLS Synchrotron (Spain). ESRF - European Synchrotron Radiation Facility (France).
Detector and Electronic group.

- Working for the first two years at the ESRF: Providing consult, support and development capabilities in the area of X-ray detectors and diagnostics for the beamlines, including assistance to the selection, specification and characterisation of commercial detectors as well as the development of specific detector systems. Responsible for developing in detectors for diagnostics. Preparation of the business model to promote the availability of an X-ray detector under EDI program of the FCRI.

Business or sector: Research

October 2010 – April 2012

Electronics Engineer. Chief Engineer

Spanish National Research Council (CSIC). Institute of Applied Physics. Serrano 141. Madrid (Spain).

- R&D in advanced systems for aircraft on "Eco_Efficiency" system of Airbus Company. Development of a complete LabVIEW data acquisition system for an electronic nose and automatic gas line. Development of multi-sensor systems using different detection principles.

Business or sector: Research

March 2009 - October 2010

Electronics Engineer

Structure of Matter Institute (CSIC). Serrano 113bis. Madrid.

- Contributing to R&D in European projects in experimental nuclear physics. Testing and maintenance of gamma and charged particle detectors, the related electronics and the acquisition system. Design a testbed to house different combination of detectors. Responsible of the electronic setup during experiments carried out at different International Facilities.

Business or sector: Research

February 2007 – March 2009

Computer Science Technician

Service Centre and Data Communications Networks (CSIRC). University of Granada.

- Providing advice of services available in the University such as scientific data networks, support in the matters of security for computer science systems and use of scientific applications.

Business or sector: Research

November 2006 - July 2007

Technical sales

Panasonic S.A.

- Technical sales: Providing customer support on the product of the mark.

March 2006 – September 2006

Teacher. Computer Science Technician. Proctor

Examination Centre of the TOEFL® iBT (TOEFL iBT Site 105413). System assembly on each test

- Training professional Access, Excel data base for companies in Granada (Spain).

Business or sector: Education

EDUCATION AND TRAINING

January 2001 – June 2007

Electronics Engineering (5 years full-time degree). Bachelor's Degree in Engineering with Master's Degree in Electronics.

Sciences Faculty. University of Granada (Spain).

- Signal processing and transmission, Project, Electronics Circuits and Component Design.
- Final project: Design and Implementation of Digital Spectrum Analyzer. Defended February 2006. Theory of Signal and Communications Group. Qualification: Excellent.

October 1996 - 2001

Physics

Four subjects to finish. University of Granada (Spain).

- Quantum Physics. Solid State physics. Nuclear and particle physics. Wave mechanics.

PERSONAL SKILLS

Mother tongue(s)

Spanish

Other language(s)

English: B2 level. Certificate in Advanced English.

French: B1 level. Courses with B1 Level.

Communication skills

- My willingness to help and my communication skills allow me to exchange my knowledge with ease and to guarantee a fluent flow of information with colleagues and users.

Organisational/managerial skills

- Analytical and organized. Good leadership. Rapid response and team work taking an active role in (nuclear and atomic) experiments performed at international Facilities.

Job-related skills

- Experience in detector development and maintenance, the set-up of data acquisition systems and the management of laboratory instrumentation. Expertise in experimental laboratory tools (digital oscilloscopes, testers, etc.). Maintenance of nuclear instrumentation and assembled data acquisition systems. Knowledge of bus Data Transfer (VME, PCI, PCI Express, etc).
- Communications Systems Development: Systems A/D, D/A. Programming microcontrollers, design and testing of electronic circuits (sch & pcd). Proven skills using analog simulators software Pspice, Tango, Proteus and Orcad capture, MATLAB and Simulink. Certificated courses with Design, production of circuit form PCB and Analysis and Design of Electronic Circuits using Pspice. Digital design with LogicWorks and LASI. Simulation of digital electronic circuits with VHDL. Frequently used and excellent knowledge from my work and studies.
- Development of processors in FPGAs. Certificated course in Embedded Hardware Processors.
- Automation and Control: Software Systems Electronic Control, PLC systems, fuzzy control. Internship as a commercial technician in Industrial Distributions Company. Sale of equipment and services for Electronics with numerous contacts with the Industry.
- Mechanical modelling: Design of a vacuum chamber for experiments with the nuclear experimental group. Shielding design for germanium detectors using tools such as Solidworks.

Computer skills

- Operating systems: All Windows systems, Linux, Mac OS X.
- Microsoft Office™ (Word™, Excel™ y PowerPoint™). Star office and Open office.
- Programming languages: C, Python, Tcl/tk, PVM, LabVIEW, The MathWorks Matlab/simulink.
- Networks: Internet, e-mail, TCP/IP, installation and configuration of local networks.
- Management system in scientific environments. Upgrade services for networks, data backup. Web design: Develop of the webpage [Spanish Network of Micro & Nano Systems](#).
- Use of tools for calculation and simulation data analysis: Paw, Geant4, ImageJ.

Driving licence

- I'm a holder of a Spanish drivers licence. Category B vehicle.

ADDITIONAL INFORMATION

Publications

- Authors: G. Jover-Manas, **C. Cruz**, O. Matilla, J. Avila, G. Pellegrini, D. Quirion, J. Rodriguez
Title: ["10 \$\mu\text{m}\$ thin transmissive photodiode produced by CELLS + IMB-CNM-CSIC"](#).
IWORID2014 Conference. Trieste (Italy)
- Authors: **Cruz. C.**, Thierry Martin, Daniel Pothin. IWORID 2013 Conference Paris.
Title: ["4x Magnification X-ray Beam Viewer for Focus Beam"](#).
- Authors: P.Doissard, L.Belfils, T.Martin, F.Riva, **C. Cruz**. Scint2013 Conference.
Title: ["Multilayer single crystal scintillating films for energy resolved microimaging X-ray detector"](#).
- Authors: Santos J., Aleixandre M., **Cruz C.**
Title: ["Hand help electronic nose for VOC detection"](#).
Ref. book: NOSE2012 ISC. International Conference on Environmental Odour Monitoring and Control. Chemical Engineering Transactions, 30, 181-186 DOI: 10.3303/CET1230031.
- Authors: **Cruz. C.**, Santos J.P, Aleixandre. M, Blanco.A, Horrillo M.Carmen.
Title: ["Advanced systems for detection of toxic substances. Towards a more eco-efficient aircraft"](#).
Workshop "Micro y Nanosistemas". Annual Meeting IBERNAM 2011.
- Authors: O. Tengblad, T. Nilsson, M.J.G. Borge, J.A. Briz, M. Carmona-Gallardo, **C. Cruz**, V. Gugliemina, E. Nácher, A. Perea, J.S. Del Rio, M.T. Nieves, H.T. Johansson, J. Bergström, E. Blomberg, A. Bülling, E. Gallneby, J. Hagdahl, L. Jansson, K. Jareteg, R. Masgren.
Title: ["Phoswich scintillator for proton and gamma radiation of high energy"](#).
Ref. book: Proc. "4th International Conference on Proton Emitting Nuclei and Related Topics", PROCON2011. Bordeaux, 6-10 June 2011. AIP Conference Proceedings 1409 (2011) 141-144.
- Authors: M. Carmona-Gallardo, B.S. Nara Singh, O. Tengblad, M. Hass, M. Alcorta, M.J.G. Borge, J.A. Briz, **C. Cruz**, M. Cubero, R. Domínguez-Reyes, B.R. Fulton, H. Fynbo, N. Gordillo, G. Haquin, Y. Nir-El, V. Kumar, Maira, J. McGrath, A. Muñoz-Martín, A. Perea.
Title: ["Astrophysical S factor for the \$4\text{He}\(3\text{He},\gamma\)7\text{Be}\$ reaction at medium energies"](#).
Ref. book: J. Phys.: Conf. Ser. 337(2012) 012061.
- Authors: V. V. Parkar, G. Marquinez, I. Martel, A. M. Sanchez-Benitez, L. Acosta, R. Berjillos, J. Duenas, J. L. Flores, J.P. Bolivar, A. Padilla, M.J.G. Borge, A. Chbihi, **C. Cruz**
Title: ["Fusion of \$8\text{He}\$ with \$206\text{Pb}\$ around Coulomb barrier energies"](#).
Ref. Book: EPJ Web of Conferences 17: 16009 (2011).
- Authors: H. alvarez-Pol, V. Avdeichikov, M. Bendel, J. Benlliure, E. Casarejos, J. CederkAll, D.Cortina-Gil, **C. Cruz**, P. Diaz, D. DiJulio, I. Duran, M. Gascon, R. Gernhauser, P. Golubev
Title: ["Progress in the design of the CALIFA/R3B detector"](#).
Ref. Book: GSI Scientific Report 2010-GSI Report 2011-1.
- Authors: G. Marquín-Durán, A.M. Sánchez Benítez, I. Martel, R. Berjillos, J. Dueñas, V.V. Parkar, L. Acosta, K. Rusek, M.A.G. Álvarez, J. Gómez-Camacho, M.J.G. Borge, **C. Cruz**
Title: ["Scattering of \$8\text{He}\$ on \$208\text{Pb}\$ at energies around the coulomb barrier"](#).
Ref.Book: XXXII Mazurian Lakes Conference on Physics, Piaski: Pologne (2011).
DOI: 10.5506/APhysPolB.43.239.

Conferences

- [IWORID 2013](#). International Workshop on Radiation Imaging Detectors. 23-27th 2013. Paris
- [SRI 2012 satellite workshop](#): X-Ray Detectors for Synchrotron Applications. 5-7th July 2012 at ETH, Zurich. The aim of the workshop was to bring together experts in synchrotron radiation detection and detector developers working in the field.
- IBERNAM School. "Microsystems and Nanotechnologies". Oral presentation of the Prosave2 project. Rovira I Virgili University. Tarragona (Barcelona). 27- 30th June 2011.
- Participation in the organization of International Congress ["Long Range Plan 2010 Town Meeting"](#) [NuPECC](#), Madrid. 31-2th June 2010.

Presentation and seminars

- Seminar: Presentation of my principal activities at the ESRF during my visit at ALBA CELLS Synchrotron, July 2013. Barcelona (Spain).
- Presentation of the results "Hamamatsu linear X-ray detector" during the meeting Detector Unit 24th January 2013. ESRF (Grenoble).
- Presentation of the 4x viewer project in the "Project Review Day" 24th October 2012. ESRF.
- Contribution in the preparation of a presentation to show the main activities and group projects through poster, video presentation, and exposition of x-ray cameras at the ESRF. This presentation has been shown to visitors of SRI Conference 2012 Lyon.
- Seminar: LabVIEW Developer Day. 17 May 2011. National Instrument, Las Rozas. Madrid.
- Seminar: Handling of hazardous liquids and gases. 6th April 2011. Organized by CSIC-ICP, Swagelok, Asecos and Sensotran Companies.
- Development and assembly of various practices for Erasmus Masters students in "Science and Nuclear Fusion Engineering Physics". Academic year 2008/09
- Responsible for assembling the doctoral program practices Nuclear Physics (MCD 2005/00251) in the course "Nuclear Experimental Techniques". Electronic setup. 18-22th January 2010.
- Organization Tour of the laboratory of the Structure of Matter Institute during the ninth week of Science held from 9-22th November 2009 in Madrid.
- Videoconference - R3B calorimeter prototypes simulation. Date: 6th April 2010. (Celebrating a follow-up of the CALIFA simulation work performed).
- Joint R3B/EXL/ELISE collaboration meeting on Technical Issues. 13-16th April 2010. GSI, Darmstadt (Germany): "The r3b calorimeter for Photons and High Energy Charged Particles".

Participation in Research Projects

- Participation in the different activities at the ESRF related to X-ray detector development and integration in the following areas: X-ray imaging, diagnostics and evaluation of commercial detectors.
- Project Title: Research Project on Advanced Systems for more Eco-plane Efficient (ProSave). CENIT project. Since 2010 to 2013. Financing entity: INGENIO Program 2010. RAMEM S.A. Company. Principal researcher: Dra. M^aCarmen Horrillo (CSIC).
- Project Title: Development of nanostructure and gravity resistive micro sensors for security applications. This work is been supported by Spanish MEC project: TEC2010-21357-C05-04 Duration: October 2010 to September 2012. Principal researcher: Dr. José Pedro Santos (CSIC).
- Project Title: Dynamics and structure of light exotic nuclei. Prototype CALIFA calorimeter for R3B in FAIR. This work is been supported by Spanish MEC project: CICYT FPA2007-62170. Duration: October 2007 to September 2009. Principal researcher: Dr. Olof Tengblad (CSIC).

Major equipment, international facilities that use or have used

- Setup and mounting detectors and electronics:
- Centre: European Synchrotron Radiation Facility (ESRF).Grenoble. (France)
Proposal: "Analysis and modelling of secondary electron generation and induced fragmentation by Synchrotron radiation in condensed bio molecular systems".
Proposal: The XNAP project and Avalanche photodiodes. 25-28th May 2012.
Proposal: High resolution X-ray imaging. Characterization and measurement of SCFs remanence and spatial resolution. 22-24th June, 28-3th December 2012, 13-15th February and 1-6th June 2013.
- Centre for Micro Analysis of Materials (CMAM). Madrid. (Spain)
Proposal: "CALIFA project (Calorimeter for In-Flight gamma detection) R3B experiment". Dates: 2-6th and 16- 20th March 2009.
Proposal: "Monolithic experiment at CMAM Rutherford scattering of ²³Na & ²⁵Al on 0.1microm ¹⁹⁷Au". Dates: 19-23th May 2009.
Proposal: "Study of the 4He (3He) 7Be reaction of Astrophysical interest". Dates: 18- 24th June 2009.
Proposal: "Cross section measurements on 3He (α,γ) 7Be direct capture reaction".
Dates: 17-30th November 2009 and July 2009.
- Centre: Nuclear and Technological Institute (ITN). Lisboa (Portugal).
Proposal: "Measure of diffusion elastic proton on the nuclei ⁵⁸Ni, ¹⁹⁷Au, ¹²Co and ⁴⁰Ca".
- Centre: Grand Accélérateur National d'Ions Lourds. GANIL (France).
Proposal: Experiment ES875. "Near barrier scattering of 8He with heavy targets".
Dates: 13-20th September 2010

Courses

- Embedded Hardware Reconfigurable Processors. FPGAs.
Date and duration: 15-18th November 2010 – 28 hours.
Centre: Astrophysics Institute - CSIC.
Activity: Knowledge of design techniques and interconnection buses available for coprocessors and peripherals embedded in reconfigurable hardware. Knowledge of the latest techniques for co design hardware/software and devices/Xilinx tools.
- Automatic with Programmable Control.
Date and duration: Since September 2003 to January 2004 – 300 hours.
Centre: Employment and technological development.
Activity: Prevention of labour risks. Wired logic. Assembly and nano-robots programming (logo), software profibus, Simatic step 5 y 7, logo and microwin32.
- Design, production of circuit form PCB.
Date: July 2004 – 30 hours. Sciences Faculty. University of Granada.
Activity: Design for commuted power systems. Lithograph. Design digital high-speed.
Project: Design and implementation in PCB: Doorbell polyphonic.
- Analysis and Design of Electronic Circuits using Pspice.
Date: March 2000 – 30 hours. Association AIEDA – University of Granada.
- Advanced Grid and Parallelization.
Date and time: December 2009. 25 hours.
Centre: IAA. Astrophysics Institute. Spanish National Research Council (CSIC).
- Shell Script Programming. Date and time: May 2011. 25 hours.
Centre: Scientific Computing Centre. University of Madrid.
- Matlab Course. March 2012. 25 hours. University of Madrid.
- Advanced administration in Linux.
Date and time: December 2009. 20 hours.
Centre: Spanish National Research Council (CSIC).
- Technical database administration MS SQL SERVER 2000.
Date and time: March to July 2008. 400 hours.
Centre of Employment and Technological Development.
- Technologies of the speech in computer science: Manager Application and current investigation.
Date and time: July 2005 – 30 hours. Courses of Mediterranean Centre. Granada.
- Days TechNet: Implementing server's security in Windows 2000 and windows server 2003.
Java Seminar in Sun Microsystems. Dr José Manuel Estrada.
- Pedagogical Aptitude Certificate (C.A.P).
Date: February 2008 - June 2008. University of Granada (Spain).

Fellowships

- Research work: I studied the worst-case radiated radiofrequency (RF) susceptibility of automated external defibrillators (AEDs) based on the electromagnetic compatibility (EMC).
Dr. Jesus Fornieles Callejón. Department of Electromagnetism and Matter Physics.

References

- [Dra. M^a José García Borge](#). ISOLDE- CERN Group Leader (France). +41 22 76 761 11 ext. 75825
- [Dr. Olof Tengblad](#). Head of Experimental Nuclear Physics Group (Spain). Tel: +34 91 561 68 00
- [Dr. Thierry Martin](#). Head of detector Unit at the ESRF, Grenoble (France). Tel: +33 47 688 20 52
- [Dr. Riccardo Orlandi](#). Researcher at Japan Atomic Energy Agency Shirakata Shirane 2-4. (Japan)
- [Dra. Mari Carmen Horriilo](#). Researcher at CSIC, Madrid (Spain). Tel: +34 915618806
- [D. Juan Martos](#). Head of Informatics Centre. University of Granada (Spain). Tel: +34 958 241 01

ANNEXES

- Motivation letter