CURRÍCULUM VÍTAE NORMALIZADO

Març̀a Boronat Arevalo

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GOBIERNO DE ESPAÑA
MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

FECYT INNOVACIÓN

Summary of CV

This section describes briefly a summary of your career in science, academic and research; the main scientific and technological achievements and goals in your line of research in the medium -and long- term. It also includes other important aspects or peculiarities.

I am a Physicist and Ph.D. in Physics, with a decade-long trajectory in Research and Development (R&D) on particle physics and accelerators. My trajectory spans contributions to particle physics, particle detectors and accelerators, working on European excellence research centers such the Instituto de Física Corpuscular (IFIC) in Valencia, Max-Planck Institute (MPI) in Munich or Conseil Européen pour la Recherche Nucléaire (CERN) in Geneva.

During my PhD, my work was founded with a grant from the Ministry of Science and Innovation (MICINN) under the Research Training Program (FPI). In this period, I have started the development of a new observable to measure the top quark mass, in the continuum, for electron-positron colliders. After 5 years of work it resulted in one of the most precise methods available and the only one capable of observing the running of the quark mass. Moreover, I worked for almost 2 years at the Max Planck Institute (MPI), as part of the Belle II collaboration, in which I took full responsibility on the implementation and design of the quality control test that has been implemented on each one of the pixel sensors installed on the inner tracker of Belle II (KEK - Japan)

After completing my Ph.D., I was awarded a postdoctoral fellowship, APOSTD2018, funded by GVA. I joined the GAP group at IFIC and the BE-RF-MKS group at CERN. In this period, I played a major role in the integration and commissioning of the HG-RF laboratory at IFIC and the operation of the high-power test benches at CERN. I studied extensively the dynamic of the dark current, the radiation produced on the high gradient accelerating structures and the relation with the breakdown positioning, designing a novel detection scheme, which proposal was granted with the Seal of Excellence MSCA – IF – 2019 with a score of 87,6% (Proposal 886946 - DISSMON).

Following my postdoctoral research, I was awarded with a Senior Fellowship at CERN. In 2020, I joined the SY-RF-MKS group, to oversee the operations of the high gradient X-Band test stands for the CLIC project. In this period, I have integrated and analysed plenty state-of-the-art accelerator structures and components, leading the integration and test of a novel superconducting solenoid for the CPI 50MW klystrons (saving 30% power). I have also worked on the development of advanced breakdown localization methods, using cutting edge machine learning algorithms, such DNNs (Deep Neural Networks) for pattern recognition on RF pulses.

In September 2023, I rejoined the accelerators group at IFIC, now named AITANA, as the responsible of instrumentation and integration of the ion accelerator that is going to be built at IFIC. This machine has been designed to provide C6+ ions beam for radiobiology experiments, aiming to explore innovative cancer treatments such as flash therapy or nanoparticle-enhancement therapy. I am currently developing the following lines of work: I oversee the assembly and commissioning of accelerator components. I am part of the studies of hadro-therapy treatment enhanced with nanoparticles in which I am responsible for the analysis process, developing advanced algorithms for

clonogenic tests, such as the implementation of DNNs to improve the accuracy of these measurements.

General quality indicators of scientific research

This section describes briefly the main quality indicators of scientific production (periods of research activity, experience in supervising doctoral theses, total citations, articles in journals of the first quartile, H index...). It also includes other important aspects or peculiarities.

Since I started as a PhD, I always took on responsibilities for overseeing the development of tasks within the research groups. On my thesis, I work independently in the development of the observable to measure the quark mass and I took full responsibility for the definition of the sanity check protocol for the Belle II PXD modules and the preparation of the test station that was finally used. When I joined the GAP in my first postdoc. I was in charge of the implementation, assembly and integration of the Low-Level RF system, the characterization of the HG - RF components, and the commissioning of them. I oversaw the planification, construction and integration of the main interlock system and the laboratory safety, including simulations, design and implementation of radiation protection measures. During this time, I oversaw a Bachelor's and Master's theses, along with supervising other internship students, both graded with top marks and one of them awarded with a mention of honor and with the “Premi Sant Jordi 2021”

In my 3-years Senior Fellowship at CERN, I held the responsibility for overseeing the operations within the test area, which included high-power systems like modulators and klystrons. I took on the responsibility for new integrations and upgrades, while also taking charge of the development of control and analysis software.

During this period, I supervised several internship students, with a particularly notable outcome achieved with Jose Bonet Faus in the application of Deep Learning for pattern recognition in electrical pulses at ESPCI PARIS.
It is important to remark the success on testing the first prototype of MgB2 solenoid for a high-power klystron, in which I took full responsibility for the integration and commissioning at CERN, developing the communication interface and interlocks, as a clear example of an activity of technological transference.

Most of the work done, especially with accelerator instrumentation, tends to go unnoticed and may take many years before it is reflected in any sort of publication. This is due to the amount of time required to develop, assemble and commission a viable machine that, in the end, will be exploited by other users. Even though, all achievements described in this application can be considered a great success and many publications have been released to probe them. It has to be noticed that due to the idiosyncrasy of the accelerator field and especially on instrumentation, the successes achieved may not be reflected on the most popular scientific quality indicators. This can be explained by the fact that most of the research in this field is done in laboratories hosting the accelerators, which operates not as an academic institute but as a service provider, keeping the publication of the results as internal reports or conference proceedings. Also, there are no high impact journals in the field, which maintain the practice of not publishing and the accelerator community is small, which is reflected in the scarce number of cites reached.

Despite the arguments previously exposed, I have contributed to 36 international publications, with an h-index of 15 and 1633 citations. But furthermore, after clarifying the information among publications with numerous contributors, when considering works with fewer than 10 authors, I still have 14 citable publications, gathering 234 citations and maintaining an h-index of 5, which is particularly noteworthy given my research line of work.

Marçà Boronat Arevalo

Surname(s): **Boronat Arevalo**
Name: **Marçà**
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Contact aut. region/reg.: **Valencian Community**

Current professional situation

Employing entity: Consejo Superior de Investigaciones Científicas
Type of entity: State agency
Professional category: Postdoctoral Contract
Start date: 01/09/2023
Type of contract: Grant-assisted student (pre or post-doctoral, others)
Dedication regime: Full time
Primary (UNESCO code): 229000 - Physical High-Energy
Secondary (UNESCO code): 220200 - Electro-magnetism
Tertiary (UNESCO code): 220300 - Electronícs
Identify key words: Physics - High energies - Experiment

Previous positions and activities

	Employing entity	Professional category	Start date
1	CERN	Postdoctoral Senior Fellowship	01/09/2020
2	Consejo Superior de Investigaciones Científicas	Postdoctoral Fellowship	01/07/2018
3	Consejo Superior de Investigaciones Científicas	Project Associate	01/10/2017
4	Consejo Superior de Investigaciones Científicas	Predoctoral Contract funded by AIDA	16/05/2016
5	Consejo Superior de Investigaciones Científicas	Predoctoral Contract	15/10/2015
6	Consejo Superior de Investigaciones Científicas	Predoctoral Fellowship FPI	01/08/2011
7	Universitat de València	Collaboration Scholarship	01/09/2010
8	DESY	Summer Student Fellowship	01/07/2010
9	Universitat de València	Summer Internship	01/07/2009
10	Universitat de València	Summer Internship	01/08/2008

1 **Employing entity:** CERN
Type of entity: Public Research Body
Department: SY-RF-MKS
Professional category: Postdoctoral Senior Fellowship
Start-End date: 01/09/2020 - 31/08/2023
Duration: 3 years
Type of contract: Grant-assisted student (pre or post-doctoral, others)

Dedication regime: Full time
Primary (UNESCO code): 229000 - Physical High-Energy
Secondary (UNESCO code): 220200 - Electro-magnetism
Tertiary (UNESCO code): 220300 - Electronícs
Performed tasks: Awarded with 3 years postdoctoral fellowship as the area operations responsible and data analyst of the high gradient RF test stands for the CLIC project. Duties performed: - Integration and operation manager with more than 14 state-of-the-art accelerator components tested, such deflectors, accelerator structures and 3D metal printed loads. - Integration and testing of new concept of superconducting solenoid, which reduces the power consumption of the CPI 50 MW klystron-modulator system by 30 %. - Development of the analysis framework (Python and GUI in LabVIEW) for the RF data produced on the CLIC test benches. - Implementation of deep neural networks for pattern recognition of RF pulses, for real-time time pulse classification and advanced breakdown (vacuum electric arcs) localisation method. - LabVIEW development for real-time applications. - Maintenance and upgrade of the different subsystems (LLRF, HG components …)
Identify key words: Physics - High energies - Phenomenology

2 **Employing entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Department: GAP - Accelerators Group at IFIC
Professional category: Postdoctoral Fellowship
Start-End date: 01/07/2018 - 30/07/2020 **Duration:** 2 years - 29 days
Type of contract: Grant-assisted student (pre or post-doctoral, others)
Dedication regime: Full time
Primary (UNESCO code): 229000 - Physical High-Energy
Secondary (UNESCO code): 220200 - Electro-magnetism
Tertiary (UNESCO code): 220300 - Electronícs
Performed tasks: Awarded with a 2-year postdoctoral fellowship, working on the collaboration between accelerator group at IFIC and BE-RF group at CERN, to construct and operate the IFIC S-Band HG-RF laboratory (Valencia), which provides two test benches to test high-gradient accelerating structures for medical applications. The position included 12 months stay at the BE-RF group at CERN, working on the operation and data analysis for the X-Band high gradient RF test benches (Xboxs). Duties performed: - Design, assembly and integration of main interlock system and the laboratory safety measures. - Integration and commissioning of the High-Power RF system (modulator, klystrons…) - Design of the laboratory radiation protection measures, Geant4 and FLUKA simulations - Development of the data analysis framework (Python based) - Study of the “dark current” dependencies with the environmental radiation produced (Geant4 and laboratory measurements) - Design and optimization of radiation detectors prototypes, based on plastic scintillators. - Operation and maintenance of the control software, LabView development and integration of the different subsystems (main interlock, radiation monitors …)
Identify key words: Physics - High energies - Phenomenology

3 **Employing entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Department: GAP - Accelerators Group at IFIC
Professional category: Project Associate
Start-End date: 01/10/2017 - 30/04/2018 **Duration:** 7 months
Type of contract: Temporary employment contract
Dedication regime: Full time
Primary (UNESCO code): 229000 - Physical High-Energy
Performed tasks: Worked as a project associate on the characterization and assembly of the RF-components for the S-Band HG-RF laboratory at IFIMED - IFIC (Valencia): - Assembly and integration of the Low-Level RF systems: Down Mixer, Log Detector, Interface crates…

- Simulations with FLUKA of expected radiation produced by the S-Band HG structures - Characterization and integration of HG – RF components (wave guides, loads, pumps, …)
Identify key words: Physics - High energies - Experiment

4 **Employing entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Department: Future Accelerator Groups
Professional category: Predoctoral Contract funded by AIDA
Start-End date: 16/05/2016 - 15/04/2017 **Duration:** 9 months - 28 days
Type of contract: Temporary employment contract
Dedication regime: Full time
Primary (UNESCO code): 229000 - Physical High-Energy
Performed tasks: I worked as a PhD student on the collaboration between MPP-HLL and IFIC in R&D of particle detectors for ILC/Belle II. Duties performed: - Major role on the production quality control test of the DEPFET sensor modules for the Belle II PXD detector. - Studies of new cooling strategies with embedded micro-channels on position-sensitive silicon detectors
Identify key words: Physics - High energies - Experiment

5 **Employing entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Department: Future Accelerator Groups
Professional category: Predoctoral Contract
Start-End date: 15/10/2015 - 28/03/2016 **Duration:** 5 months - 13 days
Type of contract: Grant-assisted student (pre or post-doctoral, others)
Dedication regime: Full time
Primary (UNESCO code): 229000 - Physical High-Energy
Performed tasks: I worked on the MPP as a responsible for the quality test protocol for the production of the DEPFET sensor modules for Belle II. Duties performed: - Development of the user interface and analysis tools for quality control assurance (post-production test - needles card). - Tests of the firsts Belle II DEPFET pixel detector modules. - Characterization of the quality control test setup (needle card, readout system, test protocol…). On the group for future accelerators at the IFIC, I played a key role on the collaboration with CLIC, to include the observable to measure the top-quark mass in the continuum, using radiative events, as a part of the CLIC physic program. Duties performed: - Estimation of systematic errors of the top-quark mass observable (integration of the WHIZARD tool on the data production chain). Luminosity spectrum correction and cuts optimization to reduce the effect of the systematics: Final State Radiation Contamination, Background Contamination. - Top-quark mass studies, on the continuum, at CLIC-380 GeV, at particle level, including geometrical aspects and jet reconstruction uncertainties.

6 **Employing entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Professional category: Predoctoral Fellowship FPI
Start-End date: 01/08/2011 - 31/07/2015 **Duration:** 4 years
Type of contract: Grant-assisted student (pre or post-doctoral, others)
Dedication regime: Full time
Primary (UNESCO code): 229000 - Physical High-Energy
Performed tasks: I worked at MPP as a responsible for the design and implementation of the quality test protocol for the production of the DEPFET sensor modules for the Belle II. I played a major role on the characterization and test during the DEPFET prototyping process, especially on the test beam data analysis (DEPFET resolution optimization) and Gated Mode validation. Duties performed: o Simulation, with Geant4, of the test beam setup and DEPFET pixel response. Analysis of the test beam data (CERN, DESY) and simulation validation. o Studies of the DEPFET gated mode performance, experiment design, implementation (MPP-Siemens Laboratories) and

analysis of results. o Design and implementation of the quality test protocol for the production of the DEPFET sensor modules for the Belle II – including setup assembly, needle card prototyping, DAQ debugging and definition of the test protocol (High Speed links test, JTAG test, Boundary Scan test, Voltage-Current test…). On the group of future accelerators, I worked on the definition of a new observable to measure the top-quark mas, in the continuum, using radiative events, at high energy e+e- colliders. Duties performed: o Definition of a new observable and study the potential sensitivity, at partonic level (Pythia8), including the initial state radiation particles (photons), final state radiation particles (photon and gluons) and a combination of both. o Studies of the observable sensitivity to the top quark running mass o Studies of the potential sensitivity, at particle level, including detector limitation and jet reconstruction optimization, for the ILC.
Identify key words: Physics - High energies - Experiment

7 **Employing entity:** Universitat de València **Type of entity:** University
Department: ATLAS
Professional category: Collaboration Scholarship
Start-End date: 01/09/2010 - 30/06/2011 **Duration:** 10 months
Type of contract: Grant-assisted student (pre or post-doctoral, others)
Dedication regime: Part time
Performed tasks: I collaborated with the ATLAS group at IFIC analysing the ttbar+jets topologies simulated with Pythia8: - Study of topologies including ttbar+jets in pp collisions at Large Hadron Collider (LHC) to obtain the top quark mass.

8 **Employing entity:** DESY **Type of entity:** University Research Institute
Department: ALTAS
Professional category: Summer Student Fellowship
Start-End date: 01/07/2010 - 01/09/2010 **Duration:** 2 months
Type of contract: Grant-assisted student (pre or post-doctoral, others)
Dedication regime: Part time
Performed tasks: I worked as a summer fellowship on the ATLAS group at DESY (Berlin). - Characterization of silicon sensors for the ATLAS SCT upgrade, noise susceptibility test of the ATLAS pixel front-end electronic.

9 **Employing entity:** Universitat de València **Type of entity:** University
Department: LARAM
Professional category: Summer Internship
Start-End date: 01/07/2009 - 30/09/2009 **Duration:** 3 months
Type of contract: Collaboration
Dedication regime: Part time
Performed tasks: I performed a summer internship on the Environmental Radiation Laboratory (LARAM): - Development of different models of low-background Alpha-Beta detectors.

10 **Employing entity:** Universitat de València **Type of entity:** University
Department: LARAM
Professional category: Summer Internship
Start-End date: 01/08/2008 - 30/09/2008 **Duration:** 2 months
Type of contract: Collaboration
Dedication regime: Part time
Performed tasks: I performed a summer internship on the Environmental Radiation Laboratory (LARAM): - Study of Radon concentration levels (Charcoal canisters and NaI spectrometer) and sediments dating (Cs-137 and Lead-210 concentration measurements with Ge spectrometer).

Education

University education

1st and 2nd cycle studies and pre-Bologna degrees

1 **University degree:** Master
Name of qualification: Master's degree in Teachers Training for High School, Middle School, Language Teaching and Sports Education
Degree awarding entity: European University of Valencia **Type of entity:** University
Date of qualification: 03/05/2018
Foreign qualification: Teaching methodology for physics on high school, based on scientific research strategies

2 **University degree:** Master
Name of qualification: Master's degree in Advanced Physics
Degree awarding entity: Universitat de València **Type of entity:** University
Date of qualification: 13/11/2012
Foreign qualification: The spatial resolution of DEPFET active pixel detectors

3 **University degree:** Higher degree
Name of qualification: Licenciado en Física Opción Física de las Partículas
Degree awarding entity: Universitat de València **Type of entity:** University
Date of qualification: 12/07/2012

Doctorates

Doctorate programme: Programa Oficial de Doctorado en Ciencias Físicas
Degree awarding entity: Universitat de València **Type of entity:** University
Date of degree: 20/07/2017
European doctorate: Yes
Thesis title: Development of the quality test protocol for the DEPFET pixel detectors and top-quark mass measurement at high energy e+e− colliders
Recognition of quality: Yes

Other postgraduate university studies

1 **Type of education:** Specialism
Postgraduate qualification: CAS Introduction to Accelerator Physics
City degree awarding entity: Chavannes de Bogis, Switzerland
Degree awarding entity: CERN **Type of entity:** Public Research Body
Faculty, institute or centre: CAS
Date of qualification: 08/10/2021

2 **Postgraduate qualification:** High Energy Physics School (TAE)
Degree awarding entity: Universidad de Zaragoza **Type of entity:** University
Date of qualification: 20/09/2013

Attended advanced, improvement and innovative teacher training and new technology courses and seminars focused on improving teaching

1 **Title of course/seminar:** CST Studio Suite and Charge Particles
Organising entity: CERN **Type of entity:** Public Research Body
Duration in hours: 20 hours
End date: 19/11/2021

2 **Title of course/seminar:** LabVIEW 1 & 2 Core
Organising entity: National Instruments **Type of entity:** Business
Duration in hours: 40 hours
End date: 15/04/2021

3 **Title of course/seminar:** Scientific Python
Organising entity: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Faculty, institute or centre: IFIC
Duration in hours: 35 hours
End date: 06/05/2016

4 **Title of course/seminar:** Hands-On Advanced C++ Programming
Organising entity: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Faculty, institute or centre: IFIC
Duration in hours: 35 hours
End date: 16/04/2014

5 **Title of course/seminar:** Hands-On Introduction to C++ Programming
Organising entity: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Faculty, institute or centre: IFIC
Duration in hours: 35 hours
End date: 12/04/2013

Language skills

Language	Listening skills	Reading skills	Spoken interaction	Speaking skills	Writing skills
French	B1	B1	B1	B1	B1
English	C1	C1	C1	C1	C1
Catalan	C2	C2	C2	C2	C2
Spanish	C2	C2	C2	C2	C2

Teaching experience

General teaching experience

Type of teaching: Official teaching
Name of the course: 2 BAT Physics - High School
Type of teaching: In person theory
End date: 10/11/2017
Type of hours/ ECTS credits: Credits
Hours/ECTS credits: 18
Entity: Alfinach **Type of entity:** High School
City of entity: Puçol, Valencian Community, Spain

Experience supervising doctoral thesis and/or final year projects

1 **Project title:** Laboratory studies of the signal propagation delays on radio-frequency resonant cavities
Type of project: End of course project
Entity: Universitat de València **Type of entity:** University
Student: Raúl Ortiz Fernandez
Obtained qualification: Sobresaliente con Matricula de Honor, Premi Sant Jordi
Date of reading: 07/2020

2 **Project title:** Geant4 Simulation of Scintillator fibers to measure the dark current in high gradient accelerators
Type of project: Minor thesis
Entity: Universitat de València **Type of entity:** University
Student: Ana Catalan Benavent
Obtained qualification: Sobresaliente
Date of reading: 09/2019

Other activities/achievements not included above

1 **Description of the activity:** External Intership, Karolina Kliment - Study of Power losses on the XBox3 test stand
Organising entity: CERN **Type of entity:** Public Research Body
End date: 09/2022

2 **Description of the activity:** External Internship, Jose Bonet Faus - Deep learning for pattern recognition in electrical pulse
Organising entity: CERN **Type of entity:** Public Research Body
End date: 09/2021

3 **Description of the activity:** External Internship, Edith Franziska Baader - Simulation with FLUKA of the Effective Dose in the S-band High-Gradient Radio Frequency Laboratory at IFIC
Organising entity: Universitat de València **Type of entity:** University
End date: 07/2018

Scientific and technological experience

Scientific or technological activities

R&D projects funded through competitive calls of public or private entities

1 **Name of the project:** PID2021-122134NB-C21- LHC y la fábrica de Higgs - Física y aspectos tecnológicos
Entity where project took place: IFIC **Type of entity:** Public Research Body
Name principal investigator (PI, Co-PI....): Vasiliki Mitsou; Marcel Vos
Start-End date: 2022 - 2025
Total amount: 450.000 €

2 **Name of the project:** PROMETEO 2021/073 - The Quest for New Physics (QNewPhys). High precision, direct searches, and technology development
Entity where project took place: IFIC **Type of entity:** Public Research Body
Name principal investigator (PI, Co-PI....): Vasiliki Mitsou; Juan Fuster Verdú
Start-End date: 2022 - 2025
Total amount: 600.000 €

3 **Name of the project:** SY-RF-MKS - Klystrons and Modulators development for CLIC
Entity where project took place: CERN **Type of entity:** Public Research Body
Name principal investigator (PI, Co-PI....): Nuria Catalan Lasheras
Start-End date: 2020 - 2023

4 **Name of the project:** PROMETEO 2018/060 - High-energy precision physics: the LHC and future electron-positron colliders
Entity where project took place: IFIC **Type of entity:** Public Research Body
Name principal investigator (PI, Co-PI....): Juan Fuster Verdú
Start-End date: 2018 - 2022
Total amount: 250.000 €

5 **Name of the project:** CERN contract KE3968/BE - Accelerators and developement of cavities
Entity where project took place: IFIC **Type of entity:** Public Research Body
Name principal investigator (PI, Co-PI....): Juan Fuster Verdú
Funding entity or bodies:
CERN **Type of entity:** Public Research Body
Start-End date: 2018 - 2020
Total amount: 160.000 €

6 **Name of the project:** AIDA2020 (2015-2019) - I+D de detectores, detectores de píxeles
Entity where project took place: IFIC **Type of entity:** Public Research Body
Name principal investigator (PI, Co-PI....): Marcel Vos
Start-End date: 2015 - 2019
Total amount: 92.000 €

7 **Name of the project:** FPA2015-65652-C4-3-R - Contribution to the ATLAS operation and analysus of data, reserach and development for future accelerators
Entity where project took place: IFIC **Type of entity:** Public Research Body
Name principal investigator (PI, Co-PI....): Juan Fuster Verdú
Start-End date: 2016 - 2018
Total amount: 290.000 €

8 **Name of the project:** CERN contract KE2638/BE - Accelerators and developement of cavities
Entity where project took place: IFIC **Type of entity:** Public Research Body
Name principal investigator (PI, Co-PI....): Juan Fuster Verdú
Funding entity or bodies:
CERN **Type of entity:** Public Research Body
Start-End date: 2015 - 2018
Total amount: 527.000 €

9 **Name of the project:** FPA2013-48387-C6-5-P - Development of new detectors and studies for future linear colliders in particle physic
Entity where project took place: IFIC **Type of entity:** Public Research Body
Name principal investigator (PI, Co-PI....): Ivan Vila Alvarez
Start-End date: 2014 - 2015
Total amount: 140.000 €

10 **Name of the project:** FPA2010-21549-C04-04 - Development of new detectors for future colliders in particle physics
Entity where project took place: IFIC **Type of entity:** Public Research Body
Name principal investigator (PI, Co-PI....): Juan Fuster Verdú; Angel Dieguez
Start-End date: 2011 - 2013
Total amount: 298.400 €

R&D non-competitive contracts, agreements or projects with public or private entities

Name of the project: Klystron fitted with a novel superconducting MgB2 solenoid
Degree of contribution: Researcher
Nº of researchers: 10
Participating entity/entities: CERN; HITACHI; KEK
Start date: 2018 **Duration:** 4 years

Results

Technological results derived from specialized and transfer activities, not included in previous sections

Description: Klystron fitted with a novel superconducting MgB2 solenoid
Degree of contribution: Researcher
New techniques or equipment: Yes
Results for improvement of products: Yes
Collaboration agreements: Yes
Collaborating entity or bodies:
CERN **Type of entity:** Public Research Body
City collaborating entity: Geneva, Switzerland

HITACHI **Type of entity:** Business
City collaborating entity: Tokyo, Japan

Start date: 2018 **Duration:** 4 years
Relevant results: A superconducting solenoid designed to be used with a 50MW CPI X-band Klystron at CERN has been evaluated successfully in nominal conditions. The energy consumption is confirmed to be below 3KW plug-power and could be reduced even further by using a less powerful cryocooler while keeping the temperature below 20 K. This constitutes a potential power saving of 30% overall. Minor adjustments of the counter-coil field can be done to match the klystron performance seen with the conventional magnet. This adjustment is fully within the tuning range of the current power supply and remains constant when increasing klystron power. The MgB2 solenoid is currently installed in the X-band test facility at CERN and is operated routinely during power tests.

Scientific and technological activities

Scientific production

Publications, scientific and technical documents

1 Christoph Obermair; et al. Explainable machine learning for breakdown prediction in high gradient rf cavities. Phys. Rev. Accel. Beams. 25 - 10, pp. 104601 - 104601. 2022. Available on-line at: <10.1103/PhysRevAccelBeams.25.104601>.
Type of production: Scientific paper **Format:** Journal
Total no. authors: 13

2 D. Gonzalez-Iglesias; D. Esperante; B. Gimeno; M. Boronat; C. Blanch; N. Fuster-Martinez; P. Martinez-Reviriego; P. Martin-Luna; J. Fuster. Analytical RF Pulse Heating Analysis for High Gradient Accelerating Structures. IEEE Trans. Nucl. Sci.68 - 2, pp. 78 - 91. 2021. Available on-line at: <10.1109/TNS.2021.3049319>.
Type of production: Scientific paper **Format:** Journal
Total no. authors: 9

3 H. Ye; et al. Commissioning and performance of the Belle II pixel detector. Nucl. Instrum. Meth. A. 987, pp. 164875 - 164875. 2021. Available on-line at: <10.1016/j.nima.2020.164875>.
Type of production: Scientific paper **Format:** Journal

Total no. authors: 106

4 D. Gonzalez-Iglesias; et al. X-band RF photoinjector design for the CompactLight project. Nucl. Instrum. Meth. A. 1014, pp. 165709 - 165709. 2021. Available on-line at: <10.1016/j.nima.2021.165709>.
Type of production: Scientific paper **Format:** Journal
Total no. authors: 11

5 B. Paschen; et al. Belle II pixel detector: Performance of final DEPFET modules. Nucl. Instrum. Meth. A. 958, pp. 162222 - 162222. 2020. Available on-line at: <10.1016/j.nima.2019.05.063>.
Type of production: Scientific paper **Format:** Journal
Total no. authors: 109

6 Março Boronat; Esteban Fullana; Juan Fuster; Pablo Gomis; Andre Hoang; Vicent Mateu; Marcel Vos; Angelika Widl. Top quark mass measurement in radiative events at electron-positron colliders. Phys. Lett. B. 804, pp. 135353 - 135353. 2020. Available on-line at: <10.1016/j.physletb.2020.135353>.
Type of production: Scientific paper **Format:** Journal
Total no. authors: 8

7 F. Abudinen; et al. DEPFET pixel detector in the Belle II experiment. Nucl. Instrum. Meth. A. 936, pp. 657 - 659. 2019. Available on-line at: <10.1016/j.nima.2018.10.048>.
Type of production: Scientific paper **Format:** Journal
Total no. authors: 108

8 P. Kodys; et al. The Belle II vertex detector integration. Nucl. Instrum. Meth. A. 936, pp. 616 - 620. 2019. Available on-line at: <10.1016/j.nima.2018.09.003>.
Type of production: Scientific paper **Format:** Journal
Total no. authors: 200

9 H. Abramowicz; et al. Top-Quark Physics at the CLIC Electron-Positron Linear Collider. JHEP. 11, pp. 003 - 003. 2019. Available on-line at: <10.1007/JHEP11(2019)003>.
Type of production: Scientific paper **Format:** Journal
Total no. authors: 117

10 M. Boronat; J. Fuster; I. Garcia; Ph. Roloff; R. Simoniello; M. Vos. Jet reconstruction at high-energy electron-positron colliders. Eur. Phys. J. C. 78 - 2, pp. 144 - 144. 2018. Available on-line at: <10.1140/epjc/s10052-018-5594-6>.
Type of production: Scientific paper **Format:** Journal
Total no. authors: 6

11 H. Abramowicz; et al. Higgs physics at the CLIC electron-positron linear collider. Eur. Phys. J. C. 77 - 7, pp. 475 - 475. 2017. Available on-line at: <10.1140/epjc/s10052-017-4968-5>.
Type of production: Scientific paper **Format:** Journal
Total no. authors: 124

12 L. Andricek; M. Boronat; I. Garcia; P. Gomis; C. Marinas; J. Ninkovic; M. Perello Rosello; M. A. Villarejo; M. Vos. Integrated cooling channels in position-sensitive silicon detectors. JINST. 11 - 06, pp. P06018 - P06018. 2016. Available on-line at: <10.1088/1748-0221/11/06/P06018>.
Type of production: Scientific paper **Format:** Journal
Total no. authors: 9

13 M. S. Amjad; et al. A precise characterisation of the top quark electro-weak vertices at the ILC. Eur. Phys. J. C. 75 - 10, pp. 512 - 512. 2015. Available on-line at: <10.1140/epjc/s10052-015-3746-5>.
Type of production: Scientific paper **Format:** Journal

Total no. authors: 13

14 Março Boronat; J. Fuster; Ignacio Garcia; E. Ros; Marcel Vos. A robust jet reconstruction algorithm for high-energy lepton colliders. Phys. Lett. B. 750, pp. 95 - 99. 2015. Available on-line at: <10.1016/j.physletb.2015.08.055>.
Type of production: Scientific paper **Format:** Journal
Total no. authors: 5

15 M. Boronat; C. Marinas; A. Frey; I. Garcia; B. Schwenker; M. Vos; F. Wilk. Physical limitations to the spatial resolution of solid-state detectors. IEEE Trans. Nucl. Sci.62 - 1, pp. 381 - 386. 2015. Available on-line at: <10.1109/TNS.2014.2376941>.
Type of production: Scientific paper **Format:** Journal
Total no. authors: 7

16 O. Alonso; at al. DEPFET active pixel detectors for a future linear electron-positron collider. IEEE Trans. Nucl. Sci.60, pp. 1457 - 1457. 2013. Available on-line at: <10.1109/TNS.2013.2245680>.
Type of production: Scientific paper **Format:** Journal
Total no. authors: 88

17 S. Aplin; M. Boronat; D. Dannheim; J. Duarte; F. Gaede; A. Ruiz-Jimeno; A. Sailer; M. Valentan; I. Vila; M. Vos. Forward tracking at the next electron-positron collider part II: experimental challenges and detector design. JINST. 8, pp. T06001 - T06001. 2013. Available on-line at: <10.1088/1748-0221/8/06/T06001>.
Type of production: Scientific paper **Format:** Journal
Total no. authors: 10

18 Halina Abramowicz; et al. International Large Detector: Interim Design Report. DESY. 2020. Available on-line at: <DESY-20-034>.
Type of production: Scientific book or monograph **Format:** Book
Total no. authors: 343

19 T. K. Charles; et al. The Compact Linear Collider (CLIC) - 2018 Summary Report. CERN Yellow Report. 2/2018, 2018. Available on-line at: <10.23731/CYRM-2018-002>.
Type of production: Scientific book or monograph **Format:** Book
Total no. authors: 692

20 A. Abada; et al. The international linear collider technical design report (TDR). ILC TDR. 2013. Available on-line at: <https://linearcollider.org/technical-design-report/>.
Type of production: Scientific book or monograph **Format:** Book

21 Halina Abramowicz; et al. The ILD detector at the ILC. DESY. 2019. Available on-line at: <DESY-19-215>.
Type of production: Scientific-technical report **Format:** Scientific and technical document or report
Total no. authors: 337

22 M J Boland; et al. Updated baseline for a staged Compact Linear Collider. CERN. 2016. Available on-line at: <10.5170/CERN-2016-004>.
Type of production: Scientific-technical report **Format:** Scientific and technical document or report
Total no. authors: 517

23 M. S. Amjad; M. Boronat; T. Frisson; I. Garcia; R. Poschl; E. Ros; F. Richard; J. Rouene; P. Ruiz Femenia; M. Vos. A precise determination of top quark electro-weak couplings at the ILC operating at 500 GeV. IFIC. 2013. Available on-line at: <IFIC-13-06>.
Type of production: Scientific-technical report **Format:** Scientific and technical document or report
Total no. authors: 10

24 H. Abramowicz; et al. Physics at the CLIC e+e- Linear Collider -- Input to the Snowmass process 2013. CSS2013. 2013.
Type of production: Scientific-technical report **Format:** Scientific and technical document or report
Total no. authors: 124

25 Matteo Volpi; et al.. Commissioning of X-LAB: a very high-capacity X-band RF test stand facility at the University of Melbourne. JACoW IPAC2023 (2023) THOGA1. IPAC 2023, 2023.
Type of production: Conference Proceedings **Format:** Journal

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Type of production: Conference Proceedings **Format:** Scientific and technical document or report
Total no. authors: 10

27 Março Boronat; Hikmet Bursali; Nuria Catalan Lasheras; Alexej Grudiev; Gerard McMonagle; Igor Syratchev. High-Power Testing Results of X-Band RF-Window and 45 Degrees Spiral Load. JACoW. LINAC2022, pp. 279 - 282. 2022. Available on-line at: <10.18429/JACoW-LINAC2022-MOPORI23>.
Type of production: Conference Proceedings **Format:** Scientific and technical document or report
Total no. authors: 6

28 Matteo Volpi; David Banon-Caballero; Março Boronat; Nuria Catalan Lasheras; Rohan Dowd; Roger Rassool; Suzanne Sheehy; Geoffrey Taylor; Scott Williams. Radiation Shielding Design for the X-Band Laboratory for Radio-Frequency Test Facility - X-Lab - at the University of Melbourne. JACoW. IPAC2022, pp. 724 - 727. 2022. Available on-line at: <10.18429/JACoW-IPAC2022-MOPOMS040>.
Type of production: Conference Proceedings **Format:** Scientific and technical document or report
Total no. authors: 9

29 Amelia V. Edwards; Março Boronat Arevalo; Nuria Catalan-Lasheras; Amos Dexter; Gerard McMonagle. Commissioning of a New X-Band, Low-Noise LLRF System. JACoW. IPAC 2021, pp. 2683 - 2686. 2021. Available on-line at: <10.18429/JACoW-IPAC2021-WEPAB038>.
Type of production: Conference Proceedings **Format:** Scientific and technical document or report
Total no. authors: 5

30 Xiaowei Wu; Março Boronat Arevalo; Alejandro Castilla; Nuria Catalan Lasheras; Amelia V. Edwards; Alexej Grudiev; Gerard McMonagle; William L. Millar; Igor Syratchev; Walter Wuensch. High-Gradient Breakdown Studies of an X-Band Accelerating Structure Operated in the Reversed Taper Direction. JACoW. IPAC 2021, pp. 1543 - 1546. 2021. Available on-line at: <10.18429/JACoW-IPAC2021-TUPAB076>.
Type of production: Conference Proceedings **Format:** Scientific and technical document or report
Total no. authors: 10

31 Tadeas Bilka; et al. Alignment for the first precision measurements at Belle II. EPJ Web Conf.245, pp. 02023 - 02023. 2020. Available on-line at: <10.1051/epjconf/202024502023>.
Type of production: Conference Proceedings **Format:** Journal
Total no. authors: 194

32 Bjorn Spruck; et al. Belle II Pixel Detector Commissioning and Operational Experience. PoS Vertex2019. Vertex2019, pp. 015 - 015. 2020. Available on-line at: <10.22323/1.373.0015>.
Type of production: Conference Proceedings **Format:** Scientific and technical document or report
Total no. authors: 106

33 Peter Kodys; et al. Data quality monitors of vertex detectors at the start of the Belle II experiment. EPJ Web Conf.245, pp. 01035 - 01035. 2020. Available on-line at: <10.1051/epjconf/202024501035>.
Type of production: Conference Proceedings **Format:** Journal
Total no. authors: 192

34 David Bañon; et al. Dark Current Analysis at CERN's X-Band Facility. JACoW. 2019. Available on-line at: <10.18429/JACoW-IPAC2019-WEPRB059>.
Type of production: Conference Proceedings **Format:** Scientific and technical document or report
Total no. authors: 15

35 Daniel Esperante Pereira; et al. Construction and Commissioning of the S-Band High-Gradient RF Laboratory at IFIC. J. Phys. Conf. Ser.1067 - 8, pp. 082024 - 082024. 2018. Available on-line at: <10.1088/1742-6596/1067/8/082024>.
Type of production: Conference Proceedings **Format:** Journal
Total no. authors: 13

36 M. Boronat; J. Fuster; I. Garcia; E. Ros; M. Vos. A new jet reconstruction algorithm for lepton colliders. Nucl. Part. Phys. Proc.273-275, pp. 2749 - 2751. 2016. Available on-line at: <10.1016/j.nuclphysbps.2015.10.051>.
Type of production: Conference Proceedings **Format:** Journal
Total no. authors: 5

37 M. Boronat; on behalf of DEPFET Collaboration. BELLE II pixel detector. PoS Vertex2015. VERTEX2015, pp. 014 - 014. 2015. Available on-line at: <10.22323/1.254.0014>.
Type of production: Conference Proceedings **Format:** Scientific and technical document or report
Total no. authors: 1

38 M. Boronat; on behalf of DEPFET Collaboration. DEPFET pixel detector for future electron-positron experiments. Nucl. Part. Phys. Proc.273-275, pp. 982 - 987. 2014. Available on-line at: <10.1016/j.nuclphysbps.2015.09.154>.
Type of production: Conference Proceedings **Format:** Journal
Total no. authors: 1

Works submitted to national or international conferences

1 **Title of the work:** High-gradient radiofrequency accelerators for radiotherapy.
Name of the conference: Workshop on Technologies & Applied Research at the Future Valencian Proton-Therapy Facility
Type of event: Workshop
Type of participation: Participatory - Plenary session
Date of event: 22/02/2024
Organising entity: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
City organizing entity: Spain

2 **Title of the work:** High-Power Testing Results of X-Band RF-Window and 45 Degrees Spiral Load
Name of the conference: 31st Linear Accelerator Conference (LINAC)
Type of event: Conference
Type of participation: 'Participatory - poster
City of event: Liverpool, United Kingdom
Date of event: 28/08/2022
End date: 02/09/2022
Type of contribution: Scientific paper

3 **Title of the work:** Superconducting solenoid for klystrons
Name of the conference: Workshop on efficient RF sources
Type of event: Conference
Type of participation: Participatory - Plenary session
City of event: Geneve, Switzerland
Date of event: 05/07/2022
Organising entity: CERN **Type of entity:** Public Research Body

4 **Title of the work:** First Operation of a Klystron Fitted With a Superconducting MgB2 Solenoid
Name of the conference: 13th International Particle Accelerator Conference
Type of event: Conference
Type of participation: Participatory - others
City of event: Bangkok, Thailand
Date of event: 17/06/2022
Organising entity: IPAC **Type of entity:** Associations and Groups
Type of contribution: Scientific paper

5 **Title of the work:** High Power X and S-Band testing at CERN
Name of the conference: International Workshop on Breakdown Science and High Gradient Technology (HG2022)
Type of event: Conference
Type of participation: Participatory - Plenary session
City of event: Online,
Date of event: 11/05/2022
Organising entity: Tsinghua University

6 **Title of the work:** Operation of the Valencia S-band high-power test stand and current activities
Name of the conference: International Workshop on Breakdown Science and High Gradient Technology (HG2019)
Type of event: Conference
Type of participation: Participatory - Plenary session
City of event: Chamonix, France
Date of event: 11/07/2019
Organising entity: CERN

7 **Title of the work:** Radiation measurement and simulation
Name of the conference: CLIC Workshop 2019
Type of event: Conference
Type of participation: Participatory - Plenary session
City of event: Geneve, Switzerland
Date of event: 22/01/2019
Organising entity: CERN **Type of entity:** Public Research Body

8 **Title of the work:** Commissioning of IFIC High Gradient RF Laboratory to test S-band accelerating structures for hadron-therapy accelerators
Name of the conference: X CPAN Days
Type of event: Workshop
Type of participation: Participatory - oral communication
City of event: Salamanca, Spain
Date of event: 29/10/2018

9 **Title of the work:** Status PXD9 Probe Card
Name of the conference: 10th Belle II VXD Workshop
Type of event: Conference
Type of participation: Participatory - Plenary session
City of event: Santander, Spain
Date of event: 14/09/2016

10 **Title of the work:** PXD9 - Module Testing after SMD Assembly
Name of the conference: 20th International Workshop on DEPFET Detectors and Applications
Type of event: Conference
Type of participation: Participatory - Plenary session
City of event: Kloster Seeon, Germany
Date of event: 13/05/2016

11 **Title of the work:** Measurement of the top-quark mass in the continuum
Name of the conference: CLIC Workshop 2016
Type of event: Conference
Type of participation: Participatory - Plenary session
City of event: Geneva, Switzerland
Date of event: 21/01/2016
Organising entity: CERN **Type of entity:** Public Research Body

12 **Title of the work:** Status of probe card test preparations
Name of the conference: 9th Belle II VXD Workshop
Type of event: Conference
Type of participation: Participatory - Plenary session
City of event: Valencia, Spain
Date of event: 13/01/2016
Organising entity: IFIC **Type of entity:** Public Research Body

13 **Title of the work:** BELLE II Pixel Detector on behalf of DEPFET Col
Name of the conference: 24th VERTEX - International Workshop on Vertex Detectors
Type of event: Conference
Type of participation: Participatory - Plenary session
City of event: Sante Fe, United States of America
Date of event: 02/06/2015
Type of contribution: Scientific paper

14 **Title of the work:** Limitations to the resolution of solid-state detectors
Name of the conference: X Jornadas de futuros colisionadores
Type of event: Workshop
Type of participation: Participatory - oral communication
City of event: Sevilla, Spain
Date of event: 18/12/2014

15 **Title of the work:** DEPFET pixel detectors for future electron-positron experiments on behalf of DEPFET Col
Name of the conference: 37th ICHEP - International conference on high energy physics
Type of event: Conference
Type of participation: Participatory - oral communication
City of event: Valencia, Spain

Date of event: 05/06/2014
Organising entity: IFIC **Type of entity:** Public Research Body
Type of contribution: Scientific paper

16 **Title of the work:** SMD at IFIC/NTC: status report
Name of the conference: 16th International Workshop on DEPFET Detectors and Applications
Type of event: Conference
Type of participation: Participatory - Plenary session
City of event: Kloster Seeon, Germany
Date of event: 13/05/2014

17 **Title of the work:** Pruebas de haz de los detectores DEPFET para el experimento Belle II y el futuro colisionador lineal electron-positron
Name of the conference: XXXIV Reunión Bienal Sociedad Española Física
Type of event: Conference
Type of participation: Participatory - oral communication
City of event: Valenca, Spain
Date of event: 18/07/2013

18 **Title of the work:** Pruebas en haz de DEPFET
Name of the conference: IX Jornadas de futuros colisionadores
Type of event: Workshop
Type of participation: Participatory - oral communication
City of event: Valencia, Spain
Date of event: 28/06/2013

19 **Title of the work:** October Test Beam Analysis
Name of the conference: 3rd Belle II PXD/SVD Workshop and 12th International Workshop on DEP- FET Detectors and Applications
Type of event: Conference
Type of participation: Participatory - Plenary session
City of event: Wetzlar, Germany
Date of event: 05/02/2013

20 **Title of the work:** DEPFET beam tests status
Name of the conference: VIII Jornadas de futuros colisionadores
Type of event: Workshop
Type of participation: Participatory - oral communication
City of event: Santander, Spain
Date of event: 18/12/2012

21 **Title of the work:** Analysis Test Beam June 2012
Name of the conference: Joint DEPFET/PXD and SVD Workshop
Type of event: Conference
Type of participation: Participatory - Plenary session
City of event: Göttingen, Germany
Date of event: 24/09/2012

22 **Title of the work:** DEPFET TB Data Analysis in Valencia
Name of the conference: 10th International Workshop on DEPFET Detectors and Applications
Type of event: Conference

Type of participation: Participatory - Plenary session
City of event: Seeon, Germany
Date of event: 19/07/2012

Other achievements

Stays in public or private R&D centres

1 **Entity:** CERN — **Type of entity:** Public Research Body
Faculty, institute or centre: BE-RF-MKS
City of entity: Geneve, Switzerland
Start-End date: 01/11/2019 - 24/05/2020 — **Duration:** 6 months - 24 days
Goals of the stay: Post-doctoral
Provable tasks: APOSTD2018 Postdoctoral Stay

2 **Entity:** CERN — **Type of entity:** Public Research Body
Faculty, institute or centre: BE-RF-MKS
City of entity: Geneva, Switzerland
Start-End date: 01/11/2018 - 08/04/2019 — **Duration:** 5 months - 8 days
Goals of the stay: Post-doctoral
Provable tasks: APOSTD2018 Postdoctoral Stay

3 **Entity:** Max Planck institute for Physics — **Type of entity:** Public Research Body
Faculty, institute or centre: MPP
City of entity: Munich, Germany
Start-End date: 01/2016 - 09/2016 — **Duration:** 9 months
Goals of the stay: Doctorate
Provable tasks: Design and preparation of a readout system using a needle card for the quality control test of the Belle II PXD

4 **Entity:** Max Planck institute for Physics — **Type of entity:** Public Research Body
Faculty, institute or centre: MPP
City of entity: Munich, Germany
Start-End date: 03/2015 - 08/2015 — **Duration:** 6 months
Goals of the stay: Doctorate
Provable tasks: Awarded with a research stay grant (by the Ministry of Economy and Competitiveness) at the MPI for Physics in Munich (Germany). Design and preparation of a readout system, using a needle card for the quality control test of the Belle II PXD, data analysis and debugging of the DEPFET Prototypes and Boundary Scan tests

5 **Entity:** Max Planck institute for Physics — **Type of entity:** Public Research Body
Faculty, institute or centre: MPP
City of entity: Munich, Germany
Start-End date: 01/2015 - 03/2015 — **Duration:** 3 months
Goals of the stay: Doctorate
Provable tasks: Design and preparation of a readout system, using a needle card for the quality control test of the Belle II PXD, data analysis and debugging of the DEPFET Prototypes and Boundary Scan tests

6 **Entity:** Max Planck institute for Physics **Type of entity:** Public Research Body
Faculty, institute or centre: MPP
City of entity: Munich, Germany
Start-End date: 09/2014 - 12/2014 **Duration:** 4 months
Goals of the stay: Doctorate
Provable tasks: Design and preparation of a readout system, using a needle card for the quality control test of the Belle II PXD, data analysis and debugging of the DEPFET Prototypes and Boundary Scan tests

7 **Entity:** Max Planck institute for Physics **Type of entity:** Public Research Body
Faculty, institute or centre: MPP
City of entity: Munich, Germany
Start-End date: 06/2014 - 07/2014 **Duration:** 2 months
Goals of the stay: Doctorate
Provable tasks: Awarded with a research stay grant (from the Ministry of Economy and Competitiveness) in the MPI for Physics in Munich(Germany). Working on the design and preparation of a test system using a needle card for the DEPFET PXD for Belle II.

8 **Entity:** CERN **Type of entity:** Public Research Body
Faculty, institute or centre: SPS
Start-End date: 12/10/2012 - 19/10/2012 **Duration:** 7 days
Goals of the stay: Experiment
Provable tasks: DEPFET Testbeam with AIDA telescope at CERN

9 **Entity:** CERN **Type of entity:** Public Research Body
Faculty, institute or centre: SPS
Start-End date: 18/06/2012 - 24/06/2012 **Duration:** 7 days
Goals of the stay: Experiment
Provable tasks: DEPFET Testbeam with AIDA telescope at CERN

10 **Entity:** DESY **Type of entity:** Public Research Body
Faculty, institute or centre: DESY II
City of entity: Hamburg, Germany
Start-End date: 26/03/2012 - 30/03/2012
Goals of the stay: Experiment
Provable tasks: DEPFET Testbeam with AIDA telescope at DESY

11 **Entity:** CERN **Type of entity:** Public Research Body
Faculty, institute or centre: CERN
City of entity: Geneva, Switzerland
Start-End date: 01/07/2011 - 30/08/2011 **Duration:** 2 months
Goals of the stay: Summer Student Program

12 **Entity:** DESY **Type of entity:** Public Research Body
Faculty, institute or centre: DESY
City of entity: Zeuthen, Germany
Start-End date: 01/07/2010 - 30/08/2010 **Duration:** 2 months
Goals of the stay: Summer Student Program

13 **Entity:** CERN **Type of entity:** Public Research Body
Faculty, institute or centre: SY-RF-MKS
City of entity: Geneve, Switzerland

Start date: 01/09/2020
Goals of the stay: Post-doctoral
Provable tasks: 3-year CERN Senior Fellowship

Obtained grants and scholarships

1 **Name of the grant:** APOSTD2018
Aims: Post-doctoral
Awarding entity: Generalitat Valenciana
Type of entity: Entidad pública
Conferral date: 01/07/2018
Duration: 2 years - 1 month
End date: 31/07/2020
Entity where activity was carried out: IFIC and CERN
Faculty, institute or centre: IFIMED and BE-RF-MKS

2 **Name of the grant:** FPI Mobility Grant
Aims: Research Stay
Awarding entity: Ministerio de Economía y Competitividad
Type of entity: State agency
Conferral date: 01/03/2015
Duration: 6 months
End date: 31/08/2015

3 **Name of the grant:** FPI - Formación Personal Investigador
Aims: Pre-doctoral
Awarding entity: MINISTERIO DE EDUCACION Y CIENCIA
Conferral date: 01/08/2011
Duration: 4 years
End date: 31/07/2015
Entity where activity was carried out: IFIC - CSIC and Max Planck institute for Physics

4 **Name of the grant:** FPI Mobility Grant
Aims: Research Stay
Awarding entity: Ministerio de Economía y Competitividad
Type of entity: State agency
Conferral date: 01/06/2014
Duration: 2 months
End date: 31/07/2014

5 **Name of the grant:** DESY summer student fellowship
Aims: Summer school
Awarding entity: DESY
Type of entity: Public Research Body
Conferral date: 01/07/2010
Duration: 2 months
End date: 30/08/2010
Entity where activity was carried out: DESY
Faculty, institute or centre: DESY - Zeuthen

6 **Name of the grant:** University collaboration scholarship
Aims: Research Project
Awarding entity: MINISTERIO DE EDUCACION Y CIENCIA
Conferral date: 01/09/2010
Duration: 1 year
End date: 30/06/2010
Entity where activity was carried out: IFIC - CSIC
Faculty, institute or centre: ATLAS group

7 **Name of the grant:** CERN Senior Fellowship
Aims: Post-doctoral
Awarding entity: CERN **Type of entity:** Public Research Body
Conferral date: 01/09/2020
Entity where activity was carried out: CERN
Faculty, institute or centre: SY-RF-MKS

Prizes, mentions and distinctions

Description: Seal of Excellence under the Horizon 2020 Marie Skłodowska-Curie actions
Awarding entity: European Commission **Type of entity:** European Agency
City awarding entity: Brussels, Belgium
Conferral date: 25/03/2020
Recognition linked: H2020-MSCA-IF-2019: proposal 886946, DISSMON Discretized Scintillators Strip Monitor for High-Gradient Accelerator Applications