CURRÍCULUM VÍTAE NORMALIZADO

Març̀a Boronat Arevalo

Generated from: Editor CVN de FECYT

Date of document: 24/02/2026

v 1.4.3

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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 with a Ph.D. in Physics, with over fifteen years of research experience. My scientific trajectory spans contributions to particle physics, particle detectors, and accelerator science, developed within internationally recognized European research institutions such as the Instituto de Física Corpuscular (IFIC) in Valencia, the Max Planck Institute (MPI) in Munich, and the European Organization for Nuclear Research (CERN) in Geneva.

During my Ph.D. at IFIC (FPI fellowship, MICINN), I developed a new observable using radiative events to measure the top quark mass in the continuum at electron–positron colliders. This work led to one of the most precise methods available and the only one capable of probing the running of the quark mass. In addition, I spent two years at the Max Planck Institute (MPI) as a member of the Belle II collaboration, where I was fully responsible for the design and implementation of the quality control tests applied to each DEPFET pixel sensor installed in the inner tracker of Belle II (KEK, Japan).

After completing my Ph.D., I was awarded a postdoctoral fellowship (APOSTD2018) funded by the Generalitat Valenciana (GVA). I joined the Accelerators Group at IFIC and the BE-RF Group at CERN, where I played a key role in the integration and commissioning of the High-Gradient RF Laboratory at IFIC and in the operation of high-power test benches at CERN. During this period, my research focused on developing instrumentation for high-gradient accelerator structures to study dark current dynamics and the associated radiation, with particular emphasis on its relation to breakdown localization. Within this framework, I designed a novel detection scheme, a proposal that was awarded the MSCA–IF–2019 Seal of Excellence (Proposal 886946 – DISSMON).

In 2020, I was awarded a CERN Senior Fellowship and joined the SY-RF-MKS group. My primary responsibility was to supervise and coordinate the operation of the high-gradient X-Band test stands for the CLIC project. During this time, I oversaw the installation, operation, and data analysis of numerous state-of-the-art accelerator structures and components. My research focused on developing advanced methods for breakdown localization, employing cutting-edge machine learning techniques, such as Deep Neural Networks (DNNs), to improve RF pulse pattern recognition. In addition, I played a key role in knowledge transfer projects, including the integration and characterization of a novel superconducting solenoid for the CLIC high-power klystrons (HITACHI) and of the new X-Band high-efficiency klystron manufactured by CANON.

In September 2023, I rejoined the Accelerators Group at IFIC—now renamed AITANA—as the lead for instrumentation and integration of the ion accelerator currently under construction at the institute. This machine is designed to deliver C6+ ion and proton beams for preclinical biomedicine and radiobiology studies, with the goal of advancing

innovative cancer treatments. My current work focuses on: overseeing the assembly and commissioning of accelerator components; designing advanced instrumentation tailored for such facilities, Recently , I have established the InstruMentation for hadron-therapY Research (IMYR) research line. This initiative focuses on overcoming the unique challenges of low- and medium-energy ion accelerators to drive safety and clinical efficacy. In addition, I am responsible for CSIC's participation in the ELBEX project at the European XFEL, where we are designing, building, and integrating the Beam Position Monitor (BPM) system for the new electron extraction line.

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.

Over the course of my career, I have contributed to 39 international publications, including several first-author papers in Q1 journals, with an h-index of 18 and a total of 2,022 citations. When considering publications with 10 authors or fewer, I have 15 citable works with a total of 287 citations—192 of them as first author—and an h-index of 6. My research has delivered significant contributions in particle physics, detector technology, and accelerator science. Beyond publications, I have presented my work at more than 20 international conferences and workshops, complemented by conference proceedings and technical reports in which instrumentation has remained a key topic.

I have actively contributed to a broad range of large-scale R&D projects at national and international levels (EU-Horizon, PROMETEO, national research plans), where I have taken on important responsibilities in the development and validation of cutting-edge technologies. Among my key contributions are the definition and implementation of the sanity check protocol applied to all DEPFET modules in the Belle II inner tracker, as well as the management of the integration, operation, and analysis of the CLIC X-Band test stands during my Senior Fellowship at CERN. I have also played a leading role in knowledge transfer (KT), including the integration of a novel superconducting solenoid for high-energy klystrons in collaboration with HITACHI, and the integration and testing of the first high-efficiency X-Band klystron prototypes developed by CANON. Furthermore, my participation in CERN KT contracts KE2638/BE and KE3968/BE on advanced accelerator studies, was essential in the creation of the S-Band HG-RF laboratory at IFIC, which is now a reference for transferring accelerator expertise to medical and industrial applications. In recognition of my research proposals, I obtained the MSCA-IF Seal of Excellence in 2019 and more recently, the Lyle Fellowship 2025 from the University of Melbourne.

Over the course of my career, I have been awarded with several competitive fellowships, including the predoctoral FPI, the GVA APOSTD (2018), and the CERN Senior Fellowship (2020–2023). My trajectory has been strongly international, with extended research stays at leading laboratories: two years at the Max Planck Institute (Munich) with the DEPFET-Belle II collaboration, three years at CERN as a Senior Fellowship in the SY-RF-MKS group, and additional periods at other international centres.

I am currently responsible for the instrumentation of the LIRA project at IFIC, overseeing the integration and commissioning of the accelerator and its subsystems, while also managing laboratory safety and radiation protection measures. In parallel, I serve as technical coordinator of the CSIC contribution to the ELBEX project at the European XFEL, on the integration of the Beam Position Monitor (BPM) system into the new electron extraction line.

My mentoring experience includes the supervision of five Master's and two Bachelor's theses, all graded with top marks. I am also co-supervising a doctoral thesis in Physics at the University of Valencia focused on the design of a high-gradient RF linear accelerator for ion therapy. In addition, I have trained and mentored international students and interns at CERN and CSIC, with demonstrable success in both academic and technological outcomes.

Març̀a Boronat Arevalo

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Contact aut. region/reg.: **Comunitat Valenciana**

Current professional situation

Employing entity: Universitat de València **Type of entity:** University
Professional category: Postdoctoral Senior Contract
Start date: 17/09/2025
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	Consejo Superior de Investigaciones Científicas	Postdoctoral Senior Contract	01/08/2023
2	CERN	Postdoctoral Senior Fellowship	01/09/2020
3	Consejo Superior de Investigaciones Científicas	Postdoctoral Fellowship	01/07/2018
4	Consejo Superior de Investigaciones Científicas	Project Associate	01/10/2017
5	Consejo Superior de Investigaciones Científicas	Predoctoral Contract funded by AIDA	16/05/2016
6	Consejo Superior de Investigaciones Científicas	Predoctoral Contract	15/10/2015
7	Consejo Superior de Investigaciones Científicas	Predoctoral Fellowship FPI	01/08/2011
8	Universitat de València	Collaboration Scholarship	01/09/2010
9	DESY	Summer Student Fellowship	01/07/2010
10	Universitat de València	Summer Internship	01/07/2009
11	Universitat de València	Summer Internship	01/08/2008

1 **Employing entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
Professional category: Postdoctoral Senior Contract
Start-End date: 01/08/2023 - 31/08/2025 **Duration:** 3 years - 1 month

Performed tasks: Lead for instrumentation and integration of the LIRA project. This machine is designed to deliver C6+ ion and proton beams for preclinical biomedicine and radiobiology studies, with the goal of advancing innovative cancer treatments. The task performed focuses on: overseeing the assembly and commissioning of accelerator components; designing advanced instrumentation tailored for such facilities, including a novel Beam Loss Monitor for low-energy ion accelerators and an advanced delivery detection system for real-time dose deposition monitoring.

2 **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

3 **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

4 **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

5 **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

6 **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.

7 **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

8 **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.

9 **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.

10 **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.

11 **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, Comunitat Valenciana, Spain

Experience supervising doctoral thesis and/or final year projects

1 **Project title:** Development of a Monte Carlo–based GEANT4 model to study the dose enhancement effect of the combined use of nanoparticles and protons in hadron therapy
Type of project: Master's Thesis
Co-director of thesis: Nuria Fuster Martinez
Entity: Universitat de València
Type of entity: University
Student: Naroa Cubillas Murguia
Obtained qualification: Sobresaliente
Date of reading: 09/2025

2 **Project title:** Design of a new detector approach for online dosimetry in low-energy hadron accelerators
Type of project: Master's Thesis
Entity: Universitat de València
Type of entity: University
Student: Alba Rey Cortés
Obtained qualification: Sobresaliente
Date of reading: 07/2025

3 **Project title:** Modelling studies on the radiosensitizing effect of gold nanoparticles
Type of project: Master's Thesis
Co-director of thesis: Nuria Fuster Martinez
Entity: Universitat de València
Type of entity: University
Student: Ramón Catalán González
Obtained qualification: Sobresaliente
Date of reading: 07/2025

4 **Project title:** Design of the Beam Loss Monitors (BLMs) for the first stage of the LincDOS6+ hadron therapy medical accelerator
Type of project: Bachelor's Thesis
Entity: Universidad de Valladolid
Type of entity: University
Student: Alba Rey Cortés
Obtained qualification: Sobresaliente
Date of reading: 07/2024

5 **Project title:** Development of a digital signal interface for the fast control of RF accelerator cavities
Type of project: Master's Thesis
Entity: Universitat Politècnica de València **Type of entity:** University
Student: Juan Carlos Fernández Ortega
Obtained qualification: Sobresaliente
Date of reading: 07/2024

6 **Project title:** Laboratory studies of the signal propagation delays on radio-frequency resonant cavities
Type of project: Bachelor's Thesis
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

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

Courses and seminars given

Type of event: Seminar
Name of the event: From High-Energy Colliders to Compact Linacs for Hadron Therapy: Advancing Cancer Treatment with Linear Accelerator Technology
City organizing entity: Melbourne, Australia
Organising entity: Melbourne University – School of Physics Colloquium

Other activities/achievements not included above

1 **Description of the activity:** External Intership 186667: Alouani El Ablaoui: Implementation of Control Electronics for RF Laboratory Systems at IFIC
Organising entity: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
End date: 07/2025

2 **Description of the activity:** External Intership 186675: Joan Martinez Cabrera : Research Training in Embedded Systems and Control Electronics for RF Laboratory Projects at IFI
Organising entity: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
End date: 07/2025

3 **Description of the activity:** External Intership 168242: Andres Arturo Carrera Barragan: Implementation of Control and Monitoring Electronics for an Ion Injection System at IFIC
Organising entity: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
End date: 01/2024

4 **Description of the activity:** External Intership 170494: Diego Reig Martínez: Full-Stack Development of a Web IoT Platform for Data Management of a Miniaturized Autonomous System
Organising entity: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
End date: 12/2023

5 **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

6 **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

7 **Description of the activity:** External Internship 34282, 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

Other teaching merits

Ongoing doctoral co-supervision:

I am currently co-supervising the Ph.D. in Physics (University of Valencia) of Eduardo Martínez López, titled “Feasibility study and design of a high-gradient RF cavity–based linear accelerator for ion therapy.”

The project focuses on the design and construction of a 3 GHz Side-Coupled Drift Tube Linac (SCDTL) structure for multi-species ion acceleration. The research involves electromagnetic optimization of the cavities to maximize accelerating efficiency and gradient while ensuring robustness against RF breakdown. Additional objectives include developing machining and fabrication criteria, defining a reliable cooling system to maintain stable operation at nominal power, and performing beam dynamics simulations for different ion species. The outcomes of this work aim to provide a solid technological basis for the implementation of compact high-gradient accelerators dedicated to ion therapy applications

Plurality, interdisciplinarity and teaching complexity

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:** HORIZON-INFRA-2023-DEV-01, 101130174 — ELBEX - An electron beamline at the EU-XFEL
Entity where project took place: DESY **Type of entity:** Public Research Body
City of entity: Hamburg, Hamburg, Germany
Name principal investigator (PI, Co-PI....): Ties Behnke
Start-End date: 2025 - 2029
Total amount: 5.500.000 €

2 **Name of the project:** LIF70273401 - Convenio CIEMAT - UV: COLABORACIÓN CIENTÍFICA Y TECNOLÓGICA EN EL CAMPO DE RADIOBIOLOGÍA
Entity where project took place: Universitat de València **Type of entity:** University
Name principal investigator (PI, Co-PI....): Daniel Esperante Pereira
Start-End date: 2025 - 2028
Total amount: 200.000 €

3 **Name of the project:** CNS2022-135420-PN-46QD - Estudio de QED en regímenes extremos en LUXE
Entity where project took place: IFIC - CSIC **Type of entity:** Public Research Body
Name principal investigator (PI, Co-PI....): Adrian Irles
Funding entity or bodies:
CENTRO DE ACUSTICA APLICADA Y EVALUACION NO DESTRUCTIVA **Type of entity:** Associations and Groups
Start-End date: 2023 - 2026
Total amount: 200.000 €

4 **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 €

5 **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 €

6 **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

7 **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 €

8 **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 €

9 **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 €

10 **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 €

11 **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 €

12 **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 €

13 **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 €

Results

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

1 **Description:** X-Band High Efficiency Klystron
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

CANON ETD **Type of entity:** Business
City collaborating entity: Otaware, Japan

Start date: 2020 **Duration:** 3 years
Relevant results: Recent klystron developments have raised efficiency from 40% to above 55%. In collaboration with Canon ETD, two prototypes of 11.994 GHz X-band high-efficiency klystrons were integrated and characterized at the Xbox3 test facility. The devices achieved a maximum RF output power of 8 MW, compared to 6.5 MW in earlier designs, while sustaining 56% efficiency at saturation. Publication: JACoW LINAC2024 (2024) THPB015

2 **Description:** Development of accelerator science and technologies associated with the Clic accelerating structures design (ref. KE2638/BE/CLIC and KE3968/BE/CLIC)
Name of the principal Investigator (PI): Juan Fuster Verdú
Name of the Co-principal investigator (Co-PI): Nuria Catalan
Degree of contribution: Researcher
New techniques or equipment: Yes
Collaboration agreements: Yes
Collaborating entity or bodies:
Universitat de València **Type of entity:** University

Consejo Superior de Investigaciones Científicas **Type of entity:** State agency

CERN **Type of entity:** Public Research Body
City collaborating entity: Geneva, Switzerland

Start date: 2018 **Duration:** 5 years
Relevant results: This project involved the construction and commissioning of a data acquisition and operational control system to support the testing of accelerator structures at the high-gradient laboratory at IFIC. It contributed directly to the laboratory start-up and to the experimental validation of accelerating cavities. In parallel, advanced computing algorithms and data analysis techniques were developed for integration into the facility's workflow. The project also addressed radiation safety by implementing an environmental radiation monitoring and control system. Additionally, radiation effects induced by high electric fields on materials

were studied through dedicated simulations in C++ and GEANT4, strengthening the technological transfer of accelerator know-how towards medical, industrial, and scientific applications.

3 **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 MgB_2 solenoid, developed for operation with a 50 MW CPI X-band klystron at CERN, has been successfully evaluated under nominal operating conditions. The measured plug-power consumption was below 3 kW and could be further reduced through the use of a lower-capacity cryocooler while maintaining operating temperatures below 20 K, corresponding to an estimated overall power saving of approximately 30%. Fine adjustments of the counter-coil field allow the klystron performance observed with the conventional electromagnet to be reproduced. These corrections lie well within the tuning range of the existing power supply and remain stable as the klystron output power increases. The MgB_2 solenoid has been installed at the CERN X-band test facility and is routinely employed during high-power operation. Publication: JACoW IPAC 2022 (2022) 3138-3140

Scientific and technological activities

Scientific production

H index: 18
Date of application: 25/09/2025
Source of H-Index: INSPIRES

Publications, scientific and technical documents

1 P. Martinez-Reviriego; N. Fuster-Martínez; D. Esperante; M. Boronat; B. Gimeno; C. Blanch; D. González-Iglesias; P. Martín-Luna; E. Martínez; A. Menendez; L. Pedraza; J. Fernández; J. Fuster; A. Grudiev; N. Catalan Lasheras; W. Wuensch. High-power performance studies of an S-band high-gradient accelerating cavity for medical applications. Nuclear Engineering and Technology. 57, pp. 103164 - 103164. Elsevier B.V. on behalf of Korean Nuclear Society, 2025. Available on-line at: <https://doi.org/10.1016/j.net.2024.08.033>. ISSN 1738-5733
Type of production: Scientific paper **Format:** Journal
Position of signature: 4
Total no. authors: 16
Impact source: SCOPUS (SJR)
Impact index in year of publication: JCI Q1

Relevant publication: Yes

2 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
Position of signature: 1
Total no. authors: 8
Impact source: SCOPUS (SJR)
Impact index in year of publication: JCI Q1
Source of citations: SCOPUS **Citations:** 21
Relevant publication: Yes

3 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
Position of signature: 1
Total no. authors: 6
Impact source: SCOPUS (SJR)
Impact index in year of publication: JCI Q1
Source of citations: SCOPUS **Citations:** 77
Relevant publication: Yes

4 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: 2
Impact source: SCOPUS (SJR)
Impact index in year of publication: JCI Q1
Source of citations: SCOPUS **Citations:** 93
Relevant publication: Yes

5 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
Position of signature: 1
Total no. authors: 5
Impact source: SCOPUS (SJR)
Impact index in year of publication: JCI Q1
Source of citations: SCOPUS **Citations:** 71
Relevant publication: Yes

6 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
Position of signature: 1
Total no. authors: 7
Impact source: SCOPUS (SJR)

Impact index in year of publication: JCI Q1

Source of citations: SCOPUS **Citations:** 18

Relevant publication: Yes

7 M. S. Amjad; S. Bilokin; M. Boronat; P. Doublet; T. Frisson; I. Garcia; M. Perelló; 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
Position of signature: 3
Total no. authors: 13
Impact source: SCOPUS (SJR)
Impact index in year of publication: JCI Q1

Citations: 93

Relevant publication: Yes

8 Nuria Catalan Lasheras; Anisullah Baig; Marçà Boronat; Alejandro Castilla; Takuji Kimura; Peter Kolda; Gerard McMonagle; Shinichiro Michizono; Igor Syratchev; Akira Yamamoto. First Operation of a Klystron Fitted with a Superconducting MgB_2 Solenoid. JACoW. IPAC2022, pp. 3138 - 3140. 2022. Available on-line at: <doi:10.18429/JACoW-IPAC2022-FROXSP3>.

Type of production: Conference Proceedings **Format:** Scientific and technical document or report
Position of signature: 3
Total no. authors: 10
Source of citations: SCOPUS **Citations:** 1

Relevant publication: Yes

9 Marça 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
Position of signature: 1
Total no. authors: 6
Relevant publication: Yes

10 B. Woolley; Daniel Esperante Pereira; Cesar Blanch Gutiérrez; Marçà Boronat; Juan Fuster; Daniel Gonzalez Iglesias; Anna Vnuchenko; Nuria Catalán Lasheras; Benito Gimeno; Gerard McMonagle; Igor Syratchev; Walter Wuensch; Angeles Faus-Golfe. 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
Position of signature: 2
Total no. authors: 13
Source of citations: SCOPUS **Citations:** 3

Relevant publication: Yes

11 M. Boronat. DEPFET pixel detector for future electron-positron experiments. Nucl. Part. Phys. Proc.273-275, pp. 982 - 987. 2016. Available on-line at: <10.1016/j.nuclphysbps.2015.09.154>.

Type of production: Conference Proceedings **Format:** Journal
Position of signature: 1
Total no. authors: 1
Source of citations: SCOPUS **Citations:** 5

Relevant publication: Yes

12 Christoph Obermair; Tomas Cartier-Michaud; Andrea Apollonio; William Millar; Lukas Felsberger; Lorenz Fischl; Holger Severin; Daniel Wollmann; Walter Wuensch; Nuria Catalan-Lasheras; Marçà Boronat; Franz Pernkopf; Graeme Burt. 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
Position of signature: 11
Total no. authors: 13
Impact source: SCOPUS (SJR)
Impact index in year of publication: JCI Q3
Source of citations: SCOPUS **Citations:** 12
Relevant publication: No

13 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

14 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

15 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

16 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

17 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

18 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

19 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

20 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

21 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

22 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

23 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

24 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

25 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

26 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

27 C. Balazs; G. Taylor; W. Mitaroff; A. H. Hoang; S. Pl{"a}tzer; G. Durieux; M. Tytgat; C. Hensel; A. B. Bellerive; F. Corriveau; D. Tuckler; C. D. Fu; Q. Ouyang; H. R. Qi; M. Q. Ruan; I. P. Ivanov; others. A Linear Collider Vision for the Future of Particle Physics. Linear Collider Vision. 2025. Available on-line at: <https://arxiv.org/abs/2503.19983v2>.
Type of production: Scientific-technical report **Format:** Scientific and technical document or report
Total no. authors: 17

28 C. Balazs; G. Taylor; W. Mitaroff; A. H. Hoang; S. Pl{"a}tzer; M. Tytgat; C. Hensel; A. B. Bellerive; F. Corriveau; D. Tuckler; C. D. Fu; Q. Ouyang; H. R. Qi; M. Q. Ruan; I. P. Ivanov; others. The Linear Collider Facility (LCF) at CERN. Linear Collider Vision. 2025. Available on-line at: <https://arxiv.org/abs/2503.24049v2>.
Type of production: Scientific-technical report **Format:** Scientific and technical document or report
Total no. authors: 16

29 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

30 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

31 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

32 P. Alonso-Arias; N. Catal{\'a}n-Lasheras; A. Chauchet; S. Gonz{\'a}lez-Ant{\'o}n; C. Marrelli; I. Syratchev; Z. Un-Nisa; M. Webber; M. D. Jones; M. Boronat; T. Anno. Validation of high efficiency klystron technology. JACoW LINAC2024 (2024) THPB01. pp. 663 - 665. JACoW Publishing, 2024. Available on-line at: <https://doi.org/10.18429/JACoW-LINAC2024-THPB015>. ISSN 2226-0366, ISBN 978-3-95450-219-6
Type of production: Conference Proceedings **Format:** Journal
Position of signature: 6
Total no. authors: 11

33 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

34 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

35 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

36 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

37 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

38 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

39 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

40 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

41 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

42 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

Works presented at national or international conferences

1 **Title of the work:** Hardware & accelerator R&D
Name of the conference: XVI CPAN DAYS
Type of event: Conference
Type of participation: Participatory - Plenary session
City of event: Madrid, Madrid, Comunidad de, Spain
Date of event: 19/11/2024
Organising entity: FUNDACION GENERAL DE LA UNIVERSIDAD COMPLUTENSE DE MADRID
Marçà Boronat Arevalo.

2 **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: Traning Session
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

3 **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
Organising entity: ohn Adams Institute and the Cockcroft Institute
Type of contribution: Scientific paper

4 **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

5 **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

6 **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

7 **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

8 **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

9 **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: Traning Session
Type of participation: Participatory - oral communication
City of event: Salamanca, Spain
Date of event: 29/10/2018

10 **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

11 **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

12 **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

13 **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

14 **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

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

16 **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

17 **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

18 **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

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

20 **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

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

22 **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

23 **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

Science Outreach activities

1 **Title of the work:** Carrera de partículas ¿Cuánto sabes sobre aceleradores de partículas?
Name of the event: EXPOCIENCIA
Corresponding author: Yes
City of event: Valencia, Comunitat Valenciana, Spain
Date of event: 10/05/2025
Organising entity: Universitat de València **Type of entity:** University
Boronat Marçà.

2 **Title of the work:** IFIC High-Gradient Radio-Frequency Accelerator Laboratory Visitor Guide
Name of the event: IFIC Outreach
Type of event: Guided Visits
Corresponding author: Yes
City of event: Valencia, Comunitat Valenciana, Spain
Date of event: 2025
Organising entity: Universitat de València **Type of entity:** University

3 **Title of the work:** Carrera de partículas ¿Cuánto sabes sobre aceleradores de partículas?
Name of the event: EXPOCIENCIA
Corresponding author: No
City of event: Valencia, Comunitat Valenciana, Spain
Date of event: 11/05/2024
Organising entity: Universitat de València **Type of entity:** University
Boronat Marçà.

4 **Title of the work:** IFIC High-Gradient Radio-Frequency Accelerator Laboratory Visitor Guide
Name of the event: IFIC Outreach
Type of event: Guided Visits
Corresponding author: Yes
City of event: Valencia, Comunitat Valenciana, Spain
Date of event: 2024
Organising entity: Universitat de València **Type of entity:** University

5 **Title of the work:** CERN High-Gradient Radio-Frequency Accelerator Laboratory Visitor Guide
Name of the event: CERN Outreach
Type of event: Guided Visits
Corresponding author: Yes
City of event: Geneva, Switzerland
Date of event: 2023
Organising entity: CERN **Type of entity:** Public Research Body
City organizing entity: Geneva, Switzerland

6 **Title of the work:** CERN High-Gradient Radio-Frequency Accelerator Laboratory Visitor Guide
Name of the event: CERN Outreach
Type of event: Guided Visits
Corresponding author: Yes
City of event: Geneva, Switzerland
Date of event: 2022
Organising entity: CERN **Type of entity:** Public Research Body
City organizing entity: Geneva, Switzerland

7 **Title of the work:** CERN High-Gradient Radio-Frequency Accelerator Laboratory Visitor Guide
Name of the event: CERN Outreach
Type of event: Guided Visits
Corresponding author: Yes
City of event: Geneva, Switzerland
Date of event: 2021
Organising entity: CERN **Type of entity:** Public Research Body
City organizing entity: Geneva, Switzerland

R&D management and participation in scientific committees

National and international forums and committees

Name of the forum: Member of the Local Organizing Committee for International Workshop on Future Linear Colliders LCWS25
Organising entity: Consejo Superior de Investigaciones Científicas **Type of entity:** State agency
City organizing entity: Valencia, Spain
Start-End date: 20/10/2025 - 24/10/2025

Evaluation and revision of R&D projects and articles

Name of the activity: Beam Loading Effects in Linear Accelerators: Modelization and Implications on the Beam-Dynamics-based Design of a Compact Neutron Source
Performed tasks: PhD Defence Committee, Ph.D. in Physics
Entity where activity was carried out: Universitat de València **Type of entity:** University
City of entity: Valencia, Spain
Start date: 07/2025

Other achievements

Stays in public or private R&D centres

1 **Entity:** Melbourne University **Type of entity:** University
City of entity: Melbourne, Australia
Start-End date: 01/07/2025 - 31/07/2025 **Duration:** 1 month
Goals of the stay: Lyle Fellowship 2025 award
Provable tasks: Collaboration Stay Period with at Melbox XLab
Type of stay: Investigación

2 **Entity:** KEK - High Energy Accelerator Research Organization **Type of entity:** Public Research Body
City of entity: Tsukuba, Japan
Start-End date: 28/05/2025 - 29/06/2025 **Duration:** 1 month
Goals of the stay: Collaboration
Provable tasks: Test under beam of the ILC BPM
Type of stay: Investigación

3 **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

4 **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

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: 01/2016 - 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

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: 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

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: 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

8 **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

9 **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.

10 **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

11 **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

12 **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

13 **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

14 **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

15 **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

1 **Description:** Lyle Fellowship 2025 – University of Melbourne
Awarding entity: University of Melbourne **Type of entity:** University
City awarding entity: Melbourne, Australia
Conferral date: 24/01/2025

2 **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

Other merits of research activity

Previous competitive calls:

1. **RyC 2024** – Proposal 048497-I, **Reserve Position: 46**
2. **RyC 2023** – Proposal 044697-I, **Reserve Position: 41**
3. **CDEIGENT 2023 -** CIDEIG/2023/25, **Reserve Position: 1**