MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

Cofinanciado por la Unión Europea

AGENCIA ESTATAL DE INVESTIGACIÓN

CURRICULUM VITAE (CVA)

CV date	09/12/2025

Part A. PERSONAL INFORMATION

First name	María del Carmen		
Family name	Jiménez Ramos		
Gender (*)	Female	Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail		URL Web	
Open Researcher and Contributor ID (ORCID) (*)		0000-0001-7109-1040	

(*) Mandatory

A.1. Current position

Position	Profesora Titular		
Initial date	02/12/2025		
Institution	Universidad de Sevilla		
Department/Center	Física Aplicada II	Centro Nacional de Aceleradores	
Country	Spain	Teleph. number	
Key words	Low energy particle accelerators, radiation detectors, Experimental Nuclear Physics		

A.2. Previous professional status (including breaks in research career, according to what is indicated in the call, indicate total months)

Period	Position/Institution/Country/Interruption cause
01/02/2008-23/05/2011	Personal Técnico de Apoyo. Titulado Superior (PTA)
01/01/2014-14/03/2015	Contrato Posdoctoral Excelencia Junta de Andalucía
15/03/2015-15/05/2017	Contrato Postdoctoral Fundación Investigación USE
16/05/2017-31/12/2017	Contrato Posdoctoral Marie Curie
19/01/2017-15/03/2021	Profesor Asociado Universidad Pablo de Olavide

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Licenciada en Física	Universidad de Sevilla	2001
Doctora en Física	Universidad de Sevilla	2013

Part B. CV SUMMARY

My doctoral research focused on high-activity Pu and U aggregates (hot particles), pioneering the application of advanced analytical methods, particularly ion-beam techniques requiring particle accelerators. My thesis led to 12 papers (8 in Q1 journals), of which I am the first author on 7 (3 in D1 journals), as well as international collaborations with institutions such as the International Atomic Energy Agency (IAEA) and the Norwegian University of Life Sciences. Since 2008, my main research area at the Centro Nacional de Aceleradores (CNA) has been nuclear instrumentation and radiation detector development. During the IAEA CRP 17034 project (2011–2015), I co-implemented the IBIC (Ion Beam Induced Charge) technique at the CNA, significantly enhancing the scientific and technical capabilities of the centre. I later served as co-PI of the IAEA F11020CRP project (2017).

My participation in European fusion projects led to major developments at the CNA that produced novel results, such as the first measurement of fast-ion loss in an experimental fusion reactor (co-supervisor of M. Rodriguez's 2017 PhD thesis). As head of the CNA cyclotron external beamline, I co-supervised a thesis that adapted the line for radiobiology studies relevant to proton therapy (A. Baratto, 2020). Since 2018, I have been Deputy Team Leader of the CNA within CERN's RD50 collaboration, coordinating the Centre's scientific

participation. As PI, I led a project on low-gain avalanche detectors for the High Luminosity - Large Hadron Collider (HL-LHC) upgrades at CERN and implemented the TRIBIC (Time-Resolved IBIC) technique. After RD50 concluded in 2023, I became CNA Team Leader within the new European Committee for Future Accelerators (ECFA) DRD3 collaboration on solid-state detectors. I also took part in a consortium funded by the Spanish 'RETOS-Colaboración' programme to characterise silicon carbide (SiC) detectors, which led to a doctoral thesis (A. García, 2022). Furthermore, until 2023, I led as principal investigator the project "Development of the Laboratory for Advanced Studies of Radiation Detectors (LEADER)", funded through the FEDER Andalucía 2014–2020 programme, which strengthened the CNA's national and international visibility in the characterisation of IBIC/TRIBIC-based semiconductor detectors.
Recently, I have received funding for three new projects. On one hand, I am PI for the University of Seville in "HR23-00718 – Dosimetry monitor for FLASH therapy," awarded within the HEALTH RESEARCH 2023 programme of Fundación "la Caixa" and carried out in a consortium with IMB-CNM-CSIC, the University of Santiago de Compostela and Institut Curie (Paris); this call targets high social impact health projects. On the other hand, in the 2023 call for expressions of interest under the Complementary R&D&I Plan for Astrophysics and High Energy Physics, it was awarded the project "Development of scientific instrumentation for national and international infrastructures in astrophysics and high energy physics," within which I am PI of Action 1.4, "Developments for ion beam therapy." Finally, the State Plan has funded the project "CNA activities for the high-luminosity upgrades of CMS and ECFA DRDs," whose activities are fully aligned with the acquisition and use of the new laser detector characterisation system now being requested.
My main research outputs and merits include co-supervision of five doctoral theses (three defended in 2017, 2020 and 2022 and two ongoing), co-supervision of ten Master's and six Bachelor's theses, as well as lecturing in the Master's in Secondary Education at UPO (2017–2018) and in the Master's in Nuclear Physics at the University of Seville (2016–2021). I also have 69 JCR publications. I highlight my leadership as PI on six projects (two European, three national and two regional), and my more than 130 conference contributions, including 26 oral presentations (five invited) and three invited university seminars. Finally, I have a European patent extended internationally and also had referee duties for ten journals of recognised standing.
My management and organisational roles include serving as Team Leader of CERN's DRD3 experiments since January 2025; representative of the CNA Nuclear Physics Group in the Spanish Nuclear Physics Network (FNUC) since June 2024, FNUC is recognised as a Strategic Network by the Spanish Research Agency (RED2024-153720-E); co-coordinator of the "Characterisation Techniques" Working Group within the CPAN (Centro Nacional de Física de Partículas, Astropartículas y Nuclear) – CNID Network. CNID is recognised as a Thematic Network by the Spanish Research Agency (RED2024-153684-T); vice-president of the Seville local section of the Royal Spanish Physics Society (RSEF) since June 2024; secretary/treasurer of the RSEF Medical Physics Group since 27 May 2025; and Scientific Coordinator of the 3 MV Tandem accelerator and the cyclotron external line, both at CNA.

Part C. RELEVANT MERITS

C.1. Publications

C.1.1. **M.C. Jimenez-Ramos** et al. "Performance of SiC Diodes at Very High Doses of Low-Energy Proton Beams Under FLASH Conditions". IEEE Transactions on Radiation and Plasma Medical Sciences, 14, 8 (2025). DOI: 10.1109/TRPMS.2025.3591229

C.1.2. **M.C. Jimenez-Ramos** et al. "Spectrometric performance of SiC radiation detectors at high temperature". Radiation Physics and Chemistry, 214, 111283 (2024). DOI: 10.1016/j.radphyschem.2023.111283

C.1.3. **M.C. Jimenez-Ramos** et al. "Study of ionization charge density-induced gain suppression in LGADs". Sensors, 22(3) 1080 (2022). DOI: 10.3390/s22031080

C.1.4. C. Guardiola, A. Marquez, **M.C. Jimenez-Ramos** et al. "Dosimetry with gafchromic films based on a new micro-opto-electro-mechanical system." Scientific Reports, 11, 10414 (2021). DOI: /10.1038/s41598-021-89602-9

C.1.5. A. Baratto-Roldán, **M.C. Jimenez-Ramos** et al. "Preparation of a radiobiology beam-line at the 18 MeV proton cyclotron facility at CNA" Physica Medica, 74, pp 19-29 (2020). DOI: 10.1016/j.ejmp.2020.04.022

C.1.6. **M.C. Jimenez-Ramos** et al. "IBIC analysis of SiC detectors developed for fusion applications" Radiation Physics and Chemistry, 177, 109100 (2020). DOI: 10.1016/j.radphyschem.2020.109100

C.1.7. E. Vittone, J. Garcia Lopez, M. Jaksic, **M.C. Jimenez-Ramos** et al. "Determination of radiation hardness of silicon diodes" Nuclear Instruments and Methods in Physics Research Section B, 449, pp 6-10 (2019). DOI: 10.1016/j.nimb.2019.04.032

C.1.8. M. Rodriguez-Ramos, M. Garcia-Muñoz, **M.C. Jimenez-Ramos** et al. "First absolute measurements of fast-ion losses in the ASDEX Upgrade tokamak" Plasma Physics and Controlled Fusion, 59, 105009 (2017). DOI: 10.1088/1361-6587/aa7e5f

C.1.9. J. Garcia-Lopez, **M.C. Jimenez-Ramos** et al. "Comparative study by IBIC of Si and SiC diodes irradiated with high energy protons". Nuclear Instruments and Methods in Physics Research Section B, 372, pp 143-150 (2016). DOI: 10.1016/j.nimb.2015.12.029

C.1.10. **M.C. Jimenez-Ramos** et al. "Characterization of scintillator materials for fast-ion loss detectors in nuclear fusion reactors" Nuclear Instruments and Methods in Physics Research Section B, 332, pp 216-219. DOI: 10.1016/j.nimb.2014.02.064

C.2. Congress

C.2.1. **M.C. Jimenez-Ramos** (speaker, oral presentation). "Medical Applications with Ion Beams at Centro Nacional de Aceleradores". XXXVIII Reunión Bienal de la Real Sociedad Española de Física (Murcia, Spain), 2022. verticesur.es/congresos/bf2022/

C.2.2. **M.C. Jimenez-Ramos** et al. (speaker, oral presentation). "Study of the spectrometric performance of SiC detectors at High Temperature". The 40th RD50 Workshop (CERN, Switzerland), 2022. indico.cern.ch/event/1157463/contributions/4923007/

C.2.3. **M.C. Jimenez-Ramos** et al. (speaker, oral presentation). "IBIC Microscopy for Semiconductor Detectors Research". Applied Nuclear Physics Conference (Praga, Czech Republic), 2021. anpc2021.cz/

C.2.4. A. Garcia Osuna, **M.C. Jimenez-Ramos** et al. (co-author, oral presentation). "Study of plasma effects and gain suppression in LGAD using a nuclear microprobe." IBA/PIXE - SIMS 2021 (online). ionbeamcenters.eu/ibc-events/iba2021-and-pixe2021/

C.2.5. **M.C. Jimenez-Ramos** et al. (speaker, oral presentation). "Study of gain suppression in LGADs using IBIC and TRIBIC". The 38th RD50 Workshop (online), 2021. indico.cern.ch/event/1029124/contributions/4410381/

C.2.6. J. Garcia-Lopez, **M.C. Jimenez-Ramos** (co-author, oral presentation). "Study of semiconductor detectors using low energy ion accelerators". The 43rd Symposium on Nuclear Physics (Cocoyoc, Mexico), 2020. fisica.unam.mx/Cocoyoc2020/

C.2.7. A. Baratto-Roldan, **M.C. Jimenez-Ramos** et al. (co-author, oral presentation). "Preparation of a radiobiology beam-line at the 18 MeV proton cyclotron facility at CNA". The International Conference on Medical Accelerators and Particle Therapy (Sevilla, Spain), 2019. indico.cern.ch/event/803528/contributions/3502652/

C.2.8. **M.C. Jimenez-Ramos** et al. (speaker, oral presentation). "Análisis de detectores de diamante monocristalinos con protones de baja energía". VIII CPAN Days (Zaragoza, Spain), 2016. indico.ific.uv.es/event/2780/

C.2.9. **M.C. Jimenez-Ramos** et al. (speaker, oral presentation). "Detector Characterization at CNA". ENSAF Workshop (Sevilla, Spain), 2016. indico.ific.uv.es/event/2824/

C.3. Research projects

C.3.1. Ref: PID2023-148418NB-C44. "Actividades del CNA para los "upgrades" de alta luminosidad de CMS y DRDs del ECFA". Spanish Ministry of Science, Innovation and

Universities. Call: Plan Estatal 2021-2023 - Proyectos Investigación No Orientada. **Role: PI**. September 2024 - December 2027. Grant: 172.375 €.

C.3.2. Ref: HR23-00718. "Dosimetry monitor for FLASH therapy". Fundación La Caixa. Call: Health Research 2023 Programme. **Role: PI**. December 2023 - November 2026. Grant: 106.976,10 €.

C.3.3. Ref: ASTRO21/1.4/4. "Desarrollos para la terapia con haces de iones". Junta de Andalucía: Consejería de Universidad, Investigación e Innovación. Call: Plan Complementario de I+D+ del PRTR. **Role: PI**. January 2021 - December 2025. Grant: 196.083 €.

C.3.4. Ref: 4598/1176. "EUROpean Laboratories for Accelerator Based Science - EURO-LABS". European Comission. Call: Horizon Europe. **Role: Researcher**. September 2022 - August 2026. Grant: 155.000 €.

C.3.5. Ref: US-1380791. "Desarrollo del Laboratorio de Estudios Avanzados de DEtectores de Radiación. Acrónimo: LEADER". Junta de Andalucía: Consejería de Economía, Conocimiento, Empresas y Universidad. Call: Proyectos I+D+i FEDER Andalucía 2014-2020 - Emergente. **Role: PI**. January 2022 – May 2023. Grant: 30.000€.

C.3.6. Ref: CFP-IPH-AWP19-SA-05-CIEMAT-01. "WPSA: Preparation and Exploitation of JT-60SA". European Comission. Call: Horizon 2020. **Role: Researcher**. January 2019 - December 2025. Grant: 201.550 €.

C.3.7. Ref: RTC-2017-6369-3. "Graphene-enhanced RAdiation detector on silicon Carbide for harsh Environments (GRACE)". Spanish Ministry of Science, Innovation and Universities. Call: Programmea Estatal de Investigación, Desarrollo e Innovación Orientada a los Retos de la Sociedad (PLAN ESTATAL I+D+I 2013-2016). **Role: US representative with the functions of the PI in the consortium**. January 2018 - June 2022. Grant: 91.958 €.

C.3.8. Ref: RD50-2017-06. "Thin LGADs characterization using Ion Beam Induced Charge (IBIC) and Time-resolved IBIC at the Centro Nacional de Aceleradores". CERN. Call: RD50 Collaboration. **Role: PI**. 2017-2021. Grant: 12.000€.

C.3.9. Ref: CRP F11020. "Ion Beam Induced Spatio-temporal Structural Evolution of Materials: Accelerators for a New Technology Era". International Atomic Energy Agency (IAEA). Call: IAEA Coordinated Research Activities. **Role: co-PI**. December 2016 – December 2020. Grant: 5.100 €.

C.4. Contracts, technological or transfer merits

C.4.1. Ref: 3848/0367. Agreement between the "Consejo de Seguridad Nuclear" and the University of Seville on an environmental radiological monitoring programme (network of sampling stations). Contract 68/83 (01/01/2020 – 31/12/2023), for 307.633,16 €

C.4.2. Ref: 2084/0708. Collaboration agreement between the CNA and the Virgen del Rocío and Virgen Macarena Hospitals to strengthen research and the development of human applications of positron emission tomography. Contract 68/83 (17/11/2013 – 16/11/2017), for 262.000 €

C.4.3. Ref: 2266/0708. Collaboration agreement between the CNA and Alter Technology T ÜV Nord S.A.U. for the development of the CNA Irradiation Laboratory. Contract 68/83 (01/01/2014 – 31/12/2017), for 87.120 €

C.4.4. Patent. Ref: 072949EP/JOA. "DOSIMOEMS: DEVELOPMENT OF REAL-TIME DOSIMETER BASED ON MICRO-OPTO-ELECTROMECHANICAL SYSTEMS". Patent application: Europe No. 21305315.0, filed on 21/03/2021. Published in the International Patent System (PCT) on 15/09/2022. Inventors: Consuelo Guardiola Salmerón, Augusto Márquez, Xavier Muños Berbel, María del Carmen Jiménez Ramos, Javier García López.