CURRÍCULUM VÍTAE NORMALIZADO

Yanis Fontenla Barba

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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.

Doctor of Philosophy (Ph.D) in particle and nuclear physics, specialized in R&D particle detectors used in field of particle physics or medecine and astroparticle physics, Cosmic Rays. My Ph.D supervisors were Juan A. Garzón Heydt and Pablo Cabanelas Eiras at Universidade de Santiago de Compostela (USC), A Coruña - Galice, Spain. **The Ph.D certificate was recognized by the Université Libre de Bruxelles (ULB), Belgium.** The title of my Ph.D thesis was «Study on the composition and energy of secondary cosmic rays with the Tragaldabas detector».

During my PhD, I have done the study of the response for Trasgo-like detectors and the particle identification with Tragaldabas Cosmic Rays telescope with algorithms. A study of the lateral distribution functions of electron and muon clusters for different nuclei (H, He, C and Fe) under the knee region was also carried out. I have acquired a strong background in tools as C/C++ programming language used in EnsarRoot framework (Ensar :: European Project) and Python programming language to write codes for the execution of simulations using high energy physics (HEP) formulas and the analysis of simulated data applied in the study of particle identification algorithms and response functions/LDF for Trasgo-like detectors. Monte Carlo simulations and Geant4 implemented in EnsarRoot included both events generators programs Corsika and Cry, were also essential for my PhD thesis work. The simulation data acquisition has done with resources from Galicia Supercomputing Center (CESGA) located in USC's campus using BASH scripts with SSH or SFTP remote connection to a CESGA account for reduce the calculation computational times from Corsika or EnsarRoot programs. My contribution to the code of EnsarRoot framework and collaboration was: implement the physics building to the geometry with the detector inside of this, the cosmic rays generator of realistic data from Cry, implement lead layers of 1 and 1.5 cm of thickness between the third and fourth plane of the detector and the implement of identification particle algorithms.

All relevant results of my works were published in scientific papers such as: Proceedings of Sciences (PoS) with «MIDAS : A particle identification tool for the Tragaldabas Cosmic Ray telescope» and «Study of the lateral distribution functions of electron and muon bundles using Trasgo detectors», or/and Physics of Atomic Nuclei of Springer with «TRASGOS: Towards a New Standard for the Regular Measurement of Cosmic Rays» and «The TRASGO Project. Present status and results». These works contribute to the development of Trasgo-like detectors located in Particle Physics department at USC and contribute to Cosmic Ray Physics in general.

Recently, I worked in Medical Physics Research collaborating with the IRIS Research Group at Institute of Corpuscular Physics (IFIC) IFIMED, contracted by the Spanish National

Research Council (CSIC) for the project 'Valorization of a monitoring system for Hadronic Therapy' (INNVA 1/2021/ 37), financed by the Agencia Valenciana de la Innovación (AVI) and the European Union through FEDER. My tasks are focused on simulation, data analysis and image reconstruction of an imaging system. I worked with tools GATE framework ('https://opengate.readthedocs.io/en/latest/index.html'), ROOT data analysis program, and C/C++ programming language. I worked developing a source C++ neutronic code for nuclear reactor modelling at ISIRYM Institute of Valencia Polytechnic University (UPV). Nowadays, I work developing a Geant4 code for ISRS of ISOLDE at ICMUV. All relevant information about me (Research Statement, Publication List, Certificates, Thesis manuscript, etc) can be found on my personal website, following link: **http://mural.uv.es/yafonbar.** Best Skills and Attributes applicable to:

- Data Analysis/Data Science
- Programming languages as C/C++, G4, Python, Matlab, or Mathematica
- Software Development
- Mathematics, Physics and Technical Educational teaching.

Yanis Fontenla Barba

Surname(s):	**Fontenla Barba**
Name:	**Yanis**
DNI:	**53240333W**
ORCID:	**0000-0002-3664-3468**
ResearcherID:	**ABC-2371-2021**
Date of birth:	**29/03/1986**
Gender:	**Male**
Nationality:	**Spain**
Country of birth:	**Belgium**
Contact province:	**Alicante**
City of birth:	**Brusells**
Contact address:	**Calle Baronía de Polop, n7, 1B**
Postcode:	**03011**
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Contact aut. region/reg.:	**Valencian Community**
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Mobile phone:	**(+34) 610*36*41*33*SPAMNOT**
Personal web page:	**http://mural.uv.es/yafonbar**

Current professional situation

Employing entity: Valencia University (UV) **Type of entity:** University Research Institute
Department: Institute of Materials Science (ICMUV)
Professional category: Postdoctoral Researcher
Start date: 24/03/2024
Type of contract: Temporary employment contract **Dedication regime:** Full time
Performed tasks: Nowadays, I work developing a source Geant4 code for the Superconducting Recoil Separator (ISRS) of ISOLDE Experiment.

Previous positions and activities

	Employing entity	Professional category	Start date
1	Valencia Polytechnic University (UPV)	Research Technician	14/09/2022
2	Spanish National Research Council (CSIC)	Research Technician	24/11/2021
3	University of Santiago de Compostela (USC)	Predoctoral Research	16/07/2019
4	University of Santiago de Compostela (USC)	Predoctoral Research	08/01/2018
5	University of Santiago de Compostela (USC)	Predoctoral Research	10/04/2017

1 **Employing entity:** Valencia Polytechnic University (UPV) **Type of entity:** University Research Institute
Professional category: Research Technician
Start-End date: 14/09/2022 - 30/11/2023 **Duration:** 443 days

2 **Employing entity:** Spanish National Research Council (CSIC) **Type of entity:** State agency
Department: Instituto de Física Corpuscular, Instalación de Física Médica (IFIMED)
City employing entity: Valencia, Valencian Community, Spain
Professional category: Research Technician
Phone: (34) 963 543 473
Start-End date: 24/11/2021 - 30/04/2022 **Duration:** 105 days
Type of contract: Temporary employment contract
Dedication regime: Part time
Performed tasks: My tasks are simulation, data analysis and image reconstruction in imaging system job at IFIMED (IFIC-CSIC). The tools used are GATE framework ('https://opengate.readthedocs.io/en/latest/index.html'), ROOT analysis program and C/C++ programming language.
Identify key words: Artificial intelligence (neuronal nets, expert systems, etc); Physics - Medical physics; Physical application and phisical technologies application
Field of management activity: Consejo Superior de Investigaciones Científicas

3 **Employing entity:** University of Santiago de Compostela (USC)
Department: Particles Physics, Facultad de Física, Universidade de Santiago de Compostela
City employing entity: Santiago de Compostela, A Coruña, Galicia, Spain
Professional category: Predoctoral Research
Phone: (+34) 881 813 952
Start-End date: 16/07/2019 - 15/12/2019 **Duration:** 87 days
Type of contract: Temporary employment contract
Dedication regime: Part time
Performed tasks: Identification algorithms and reconstruction of cosmic rays. Contract financed by the Consolidation and Structuring 2017 GRC GI-1493 Experimental Group of Nuclei and Particles (GENP) (2017- PG068) Ref.ED431C 2017/54
Identify key words: Physics - Experimental nuclear physics; Instrumentations and detectors for experiments in physics, astrophysics, etc
Field of management activity: University

4 **Employing entity:** University of Santiago de Compostela (USC)
Department: Particles Physics, Facultad de Física, Universidad de Santiago de Compostela
City employing entity: Santiago de Compostela, A Coruña, Galicia, Spain
Professional category: Predoctoral Research
Phone: (+34) 881 813 952
Start-End date: 08/01/2018 - 07/04/2018 **Duration:** 48 days
Type of contract: Temporary employment contract
Dedication regime: Part time
Performed tasks: Particles identification of atmospheric air showers in Tragaldabas detector. Contract financed by complementary support to the postdoctoral contracts of the modality B 2016 (2016-PG005) Ref.
Identify key words: Physics - Experimental nuclear physics; Instrumentations and detectors for experiments in physics, astrophysics, etc
Field of management activity: University

5 **Employing entity:** University of Santiago de Compostela (USC)
Department: Particles Physics, Facultad de Física, Universidad de Santiago de Compostela
City employing entity: Santiago de Compostela, A Coruña, Galicia, Spain
Professional category: Predoctoral Research
Phone: (+34) 881 813 952
Start-End date: 10/04/2017 - 09/10/2017 **Duration:** 98 days
Type of contract: Temporary employment contract
Dedication regime: Part time
Performed tasks: Particles identification of atmospheric air showers in Tragaldabas detector. Contract financed by complementary support to the postdoctoral contracts of the modality B 2016 (2016-PG005) Ref.
Identify key words: Physics - Experimental nuclear physics; Instrumentations and detectors for experiments in physics, astrophysics, etc
Field of management activity: University

Education

University education

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

University degree: 4 years Bachelor
Name of qualification: Bachelor's Degree in Physics
City degree awarding entity: Valencia, Valencian Community, Spain
Degree awarding entity: University of Valencia
Date of qualification: 17/03/2014
Average mark: Excellent

Doctorates

Doctorate programme: PhD in Particles and Nuclear Physics
Degree awarding entity: University of Santiago de Compostela **Type of entity:** University
City degree awarding entity: Santiago de Compostela, Galicia, Spain
Date of degree: 16/01/2020
Date of certificate: 20/12/2019
Thesis title: Study on the composition and energy of secondary cosmic rays with the Tragaldabas detector
Thesis director: Juan Antonio Garzón Heydt
Thesis co-director: Pablo Cabanelas Eiras
Recognition of quality: No
Special doctorate award: No
Standardised degree: No

Other postgraduate university studies

1 **Type of education:** Masters
Postgraduate qualification: Master's Degree in Secondary Education Teacher
City degree awarding entity: Valencia, Valencian Community, Spain
Degree awarding entity: University of Valencia **Type of entity:** University
Faculty, institute or centre: Faculty of social sciences
Date of qualification: 22/07/2022

2 **Type of education:** Masters
Postgraduate qualification: Master's Degree in Advanced Physics from University of Valencia (Estudi General)
City degree awarding entity: Valencia, Valencian Community, Spain
Degree awarding entity: University of Valencia
Date of qualification: 30/07/2015

Specialised, lifelong, technical, professional and refresher training (other than formal academic and healthcare studies)

Type of training: Course
Training title: Technician Certificate in Physical-Chemical Analysis and Quality Control
City awarding entity: Alicante, Valencian Community, Spain
Awarding entity: IES Virgen del Remedio, Alicante **Type of entity:** High College
End date: 27/06/2007 **Duration in hours:** 2000 hours

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

1 **Title of course/seminar:** Practicum as Mathematics Teacher
Goals of the course/seminar: Practicum in a Secondary School Center
City organizing entity: València, Valencian Community, Spain
Organising entity: Universitat de València **Type of entity:** University
Faculty, institute or centre: Magister Faculty
Duration in hours: 250 hours
Start-End date: 12/01/2022 - 11/03/2022

2 **Title of course/seminar:** Online PATC@BSC Training Course: Systems Workshop: Programming MareNostrum 4
Goals of the course/seminar: Increase theoretical and practical notions in supercomputing
Organising entity: Barcelona Supercomputing Center **Type of entity:** Public Research Body
Faculty, institute or centre: BSC
Duration in hours: 10 hours
Start-End date: 24/02/2020 - 25/02/2020

3 **Title of course/seminar:** Introducción á plataforma Hadoop 3 do CESGA
Goals of the course/seminar: Increase theoretical and practical notions with Hadoop3
Organising entity: Centro de Supercomputación de Galicia **Type of entity:** State agency
Faculty, institute or centre: Universidad de Santiago de Compostela
Duration in hours: 3 hours
Start-End date: 11/06/2019 - 11/06/2019

4 **Title of course/seminar:** Campus del TRASGO
Goals of the course/seminar: Incrementar nociones básicas en Física de astropartículas y detectores de partículas
Organising entity: Universidad de Santiago de Compostela **Type of entity:** University
Faculty, institute or centre: Física, LabCAF
Duration in hours: 30 hours
Start-End date: 02/07/2018 - 20/07/2018

5 **Title of course/seminar:** Training Intel parallel Studio XE, 2018
Goals of the course/seminar: Increase theoretical and practical notions with MPI
Organising entity: Centro de Supercomputación de Galicia **Type of entity:** State agency

Faculty, institute or centre: Universidad de Santiago de Compostela
Duration in hours: 18 hours
Start-End date: 29/01/2018 - 31/01/2018

6 **Title of course/seminar:** MPI Avanzado: Características Modernas
Goals of the course/seminar: Increase theoretical and practical notions with MPI
Organising entity: Centro de Supercomputación de Galicia **Type of entity:** State agency
Faculty, institute or centre: Universidad de Santiago de Compostela
Duration in hours: 20 hours
Start-End date: 19/06/2017 - 23/06/2017

7 **Title of course/seminar:** Introducción a la programación paralela
Goals of the course/seminar: Increase theoretical and practical notions with MPI
Organising entity: Centro de Supercomputación de Galicia **Type of entity:** State agency
Faculty, institute or centre: Universidad de Santiago de Compostela
Duration in hours: 20 hours
Start-End date: 08/05/2017 - 12/05/2017

8 **Title of course/seminar:** Taller: Acceso a Finis Terrae II
Goals of the course/seminar: Increase theoretical and practical notions in supercomputing
Organising entity: Centro de Supercomputación de Galicia **Type of entity:** State agency
Faculty, institute or centre: Universidad de Santiago de Compostela
Duration in hours: 4 hours
Start-End date: 12/12/2016 - 12/12/2016

9 **Title of course/seminar:** Taller Big Data
Goals of the course/seminar: Increase theoretical and practical notions in Big Data
Organising entity: Centro de Supercomputación de Galicia **Type of entity:** State agency
Faculty, institute or centre: Universidad de Santiago de Compostela
Duration in hours: 4 hours
Start-End date: 18/10/2016 - 18/10/2016

10 **Title of course/seminar:** Practicum as Laboratory assistant
Goals of the course/seminar: Practicum in Laboratory
City organizing entity: Alicante, Valencian Community, Spain
Organising entity: EMPR. PROV. AGUAS COSTABLANCA. PROAGUAS COSTABLANCA, S.A.
Faculty, institute or centre: IES Virgen del Remedio
Duration in hours: 390 hours
Start-End date: 20/03/2007 - 26/03/2007 **Length:** 3 months
Provable tasks: Chemical and microbiological analysis of residual water from Wastewater Treatment Plants in the province of Alicante, Spain, for a total of 390 hours. First professional experience in Physicochemical and Microbiological test of Residual Water and Sludge. Quality Tests: - Physicochemical Test : Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD5), Total Suspend Solids (TSS), Ph, Electrical conductivity, Turbidity, Total Nitrogen, Total Phosphorus, carbonates, bicarbonates, Total Kjeldahl Nitrogen (TKN) and determination of ammonium. - Knowledge in different analytical techniques such as: Ionic Chromatography, Gas Chromatography and Gas Chromatography Mass, and Inductively Coupled Plasma (ICP). - Microbiological Test: Determination and Quantification of total coliforms, fecal coliforms and fecal streptococci by Membrane Filtre (MF) technique and test of Legionella, Clostridium perfringens, aerobes at 22ºC, e.coli and salmonella.

Aims of the stay: Internship

Language skills

Language	Listening skills	Reading skills	Spoken interaction	Speaking skills	Writing skills
English	B1	B1	B1	B1	B2
Catalan	B2	B2	B2	B2	B2
French	C1	C1	C2	C2	B2
Spanish	C1	C1	C2	C2	C1

Teaching experience

Experience supervising doctoral thesis and/or final year projects

Project title: Estudio de la distribución lateral de rayos cósmicos secundarios en función de la energía del primario
Type of project: End of course project
Entity: Universidad de Santiago de Compostela **Type of entity:** University
City of entity: Santiago de Compostela, Galicia, Spain
Student: Aida Álvarez Díez
Obtained qualification: Excellent
Identify key words: Astronomy and astrophysics; Cosmic radiation; Instrumentations and detectors for experiments in physics, astrophysics, etc
Date of reading: 17/09/2019

Teaching experience in courses and seminars for university teacher training

1 **Type of event:** Seminar
Name of the event: Particle identification with TRAGALDABAS. Status report
Organising entity: LabCAF
Aims of the course: Presentación de resultados del estudio de identificación de partículas con el detector Tragaldabas
Target group profile: Investigadores de la Colaboración y estudiantes de último curso de Grado en Física
Hours of teaching: 2 **Teaching language:** Spanish
Teaching date: 20/01/2019
Type of participation: Participatory - oral communication
Corresponding author: Yes

2 **Type of event:** Seminar
Name of the event: Shower simulation status report
Organising entity: LabCAF
Aims of the course: Presentación de resultados del estudio de simulación de rayos cósmicos secundarios con detectores Trasgo
Target group profile: : Investigadores de la Colaboración y estudiantes de último curso de Grado en Física
Hours of teaching: 2 **Teaching language:** Spanish
Teaching date: 10/10/2018
Type of participation: Participatory - oral communication

Corresponding author: Yes

3 **Type of event:** Seminar
Name of the event: Calorimetric Analysis of TRAGALDABAS detector
Organising entity: LabCAF
Aims of the course: Estudio de observables físicos y estrategias para la eficiente identificación de partículas con el detector Tragaldabas
Target group profile: Investigadores de la Colaboración y estudiantes de último curso de Grado en Física
Hours of teaching: 2 **Teaching language:** Spanish
Teaching date: 02/10/2018
Type of participation: Participatory - oral communication
Corresponding author: Yes

Scientific and technological experience

Research and development groups/teams

1 **Name of the group:** Senubio Group: Neutronics and nuclear safety
Aims of the group: Nuclear Safety and Bioengineering of Ionizing Radiation
Name of principal investigator: Gumersindo Jesús Verdú Martín **Number of members in the group:** 22
Type of collaboration: Collaboration in training third parties
City of group: Valencia, Valencian Community, Spain
Affiliation entity: Research Institute for Industrial, Radiophysical and Environmental Safety (ISIRYM) **Type of entity:** University Research Institute
Identify key words: Nuclear medicine
Start date: 14/09/2022

2 **Name of the group:** IRIS Group
Aims of the group: Detectors development and image reconstruction of an imaging system for Medical Physics
Name of principal investigator: Gabriela Llosá
Type of collaboration: Collaboration in training third parties
City of group: Valencian Community, Spain
Affiliation entity: Spanish National Research Council (CSIC) **Type of entity:** State agency
Identify key words: Physics - Medical physics; Physical application and phisical technologies application
Start date: 22/11/2021 **Duration:** 105 days

3 **Name of the group:** TRAGALDABAS Collaboration
Aims of the group: Investigación y Desarrollo para el detector de rayos cósmicos TRAGALDABAS
Name of principal investigator: Juan Antonio Garzón Heydt
Type of collaboration: Collaboration in training third parties
Affiliation entity: Carmen Fernández Laboratory (LabCAF) in University of Santiago de Compostela
Identify key words: Astrophysics; Physics - Experimental nuclear physics; Physical application and phisical technologies application; Instrumentations and detectors for experiments in physics, astrophysics, etc; Atmosphere
Start date: 01/12/2017 **Duration:** 3 years

Scientific or technological activities

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

1 **Name of the project:** Proof of the Neutronic Transport Concept (PDC2021-121667-I00)

Type of project: Research and development, including transfer

Geographical area: National

Degree of contribution: Researcher

Entity where project took place: Universidad Politécnica de Valencia

Type of entity: University

City of entity: València, Valencian Community, Spain

Name principal investigator (PI, Co-PI....): Gumersindo Jesús Verdú Martín; Damián Ginestar Peiro; Antoni Vidal Ferrandíz; Belen Jeanine Juste Vidal; Mónica Martínez Lianes; Vicente Emilio Vidal Gimeno; Yanis Fontenla Barba

Nº of researchers: 7

Type of participation: Team member

Name of the programme: Prueba de Concepto de Transporte Neutrónico

Code according to the funding entity: PDC2021-121667-I00

Start-End date: 2021 - 2023

Total amount: 72.450 €

Dedication regime: Full time

Applicant's contribution: Prueba de Concepto de Transporte Neutrónico (PDC2021-121667-I00). (01/12/21 - 30/11/23). Investigación competitiva proyectos. AGENCIA ESTATAL DE INVESTIGACION.

2 **Name of the project:** VALMONT- Valorization of a hadron therapy monitoring system (INNVA1/2021/37)

Type of project: Research and development, including transfer

Geographical area: Regional

Degree of contribution: Technician

Entity where project took place: Consejo Superior de Investigaciones Científicas

Type of entity: State agency

City of entity: València, Valencian Community, Spain

Name principal investigator (PI, Co-PI....): Gabriela Llosá

Name of the programme: VALMONT- Valorization of a hadron therapy monitoring system

Code according to the funding entity: INNVA1/2021/37

Start-End date: 2021 - 2023

Total amount: 337.926,35 €

Dedication regime: Part time

Scientific and technological activities

Scientific production

Publications, scientific and technical documents

1 Fontenla 1; Vidal Ferràndiz 2; Carreño 3; Ginestar 4; Verdú. FEMFFUSION and its verification using the C5G7 benchmark. Elseiver. Y. Fontenla, 02/09/2023.

Type of production: Scientific paper
Format: Journal
Corresponding author: Yes

2 Damian García Castro; M. Ajoor; Hector Alvarez Pol. The TRASGO Project. Present status and results. Physics of Atomic Nuclei. 84 - 6, pp. 1070 - 1079. (Switzerland): Springer, 24/12/2021. Available on-line at: <https://doi.org/10.1134/S1063778821130093>. ISSN 1063-7788

DOI: S1063778821130093
Type of production: Scientific paper
Format: Journal
Position of signature: 12
Degree of contribution: Editor or co-editor
Total no. authors: 28
Impact source: Springer
Impact index in year of publication: 0.420

3 Juan Antonio Garzón Heydt. TRASGOS: Towards a New Standard for the Regular Measurement of Cosmic Rays. Physics of Atomic Nuclei. 83 - 3, pp. 453 - 462. (Switzerland): Springer, 09/09/2020. Available on-line at: <https://doi.org/10.1134/S1063778820030084>. ISSN 1063-7788

DOI: S1063778820030084
Type of production: Scientific paper
Format: Journal
Position of signature: 22
Degree of contribution: Editor or co-editor
Total no. authors: 30
Corresponding author: No
Impact source: Springer
Impact index in year of publication: 0.420

4 Yanis Fontenla Barba. MIDAS : A particle identification tool for the Tragaldabas Cosmic Ray telescope. Proceedings of Science (PoS). 01/09/2019. Available on-line at: <https://doi.org/10.22323/1.358.0072>. ISSN 1824-8039

DOI: 10.22323/1.358.0072
Type of production: Scientific paper
Format: Scientific and technical document or report
Position of signature: 1
Degree of contribution: Editor or co-editor
Total no. authors: 1
Corresponding author: Yes
Impact source: PoS
Impact index in year of publication: 0.14

5 Aida Álvarez Díez; Pablo Cabanelas Eiras; Yanis Fontenla Barba; Juan Antonio Garzón Heydt. Study of the lateral distribution functions of electron and muon bundles using Trasgo detectors. Proceedings of Science (PoS). 01/09/2019. Available on-line at: <https://doi.org/10.22323/1.358.0067>. ISSN 1824-8039

DOI: 10.22323/1.358.0067
Type of production: Scientific paper
Format: Scientific and technical document or report

Position of signature: 1
Total no. authors: 4
Impact source: PoS
Impact index in year of publication: 0.14

Degree of contribution: Editor or co-editor
Corresponding author: Yes

Other achievements

Obtained grants and scholarships

Name of the grant: Becas y ayudas al estudio de carácter general y de movilidad, para el curso académico 2012-2013, para estudiantes de enseñanzas universitarias
City awarding entity: Spain
Aims: Estudios de Grado
Awarding entity: Ministerio de Educación, Cultura y Deporte
Amount of the grant: 2.800 €
Conferral date: 08/04/2013
Entity where activity was carried out: FUNDACIÓN GENERAL DE LA UNIVERSITAT DE VALÈNCIA
Faculty, institute or centre: Facultad de Física