

**c v n** CURRÍCULUM VITAE NORMALIZADO



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Date of document: 26/04/2023  
**v 1.4.3**  
a6816e1ce70f6756507daa73f785bc93

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## 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 currently directing a bachelor thesis (PFG) at UPM entitled "Development, implementation and analysis of functionality of a digital certificate based on the RSA algorithm", by student Ruiz-Huidobro Macías.

On 2021/2022, we successfully apply to the research projects call "Proyectos de Generación de Conocimiento 2021" of the Ministry of Science and Innovation (Spain), ref. PID2021-124473NB-I00. This is also my first research project in the field of applied mathematics. Furthermore, the UPM has granted us a co-funding for the acquisition of a high performance computing with 1TB of RAM memory (and 17TB of storage). This machine will be necessary for dealing with the massive algebraic (analytic) computation that this project involves. Here, I can take advantage of my high performance computing skills.

From 01/09/2020, I am assistant professor in the Applied Mathematics for ICT Depart. at ETSIST (Technical University of Madrid). I maintain my collaborations related with Lattice-QCD and Effective Field Theories.

On 01/10/2019, I started a INFN fellowship in the Florence Particle Physics and Cosmology Group at INFN-Firenze. On 01/10/2017, I started my first post-doc in the T30f group in the TUM (Munich) with a post-doctoral grant from the Ramon Areces Foundation.

I obtained my habilitation as "Prof. Contratado Doctor" and "Prof. de Univ. Privada" on 07/2018. I have several research interests, including applied mathematics and computational algebra, lattice QCD and NRQCD, LHC-phenom. of dark matter models and BSM physics related with the EW sector, and condensed matter physics.

Before my post-doc at TUM, I collaborated with Prof.F.Sols and Dr.I.Zapata under a short-term research contract in a project related with condensed matter (Anderson's model). On top of that, I obtained my Master in Teaching (UNED) and spent Nov-2016 at SLAC invited by prof. Stanley Brodsky.



## 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.

Articles in INSPIRE-HEP (+2 publications outside of INSPIRE-HEP): 36;  
Total number of citations: 2354; h-index: 10  
Source: INSPIRE-HEP

Publications (Web of Science): 19; WoS Documents: 31;  
Total times cited: 274; Average citations per document: 14.42; h-index: 8

Springer Theses Award, PhD Extraordinary Award.

Editor of the report of the VBSCan Mid-Term Scientific Meeting  
Contribution to a CERN Yellow Report of the LHCHSWG Collaboration with 1681 citations.

Publication selected for the "Highlights of 2014" of Journal of Physics G.

==> IMPORTANT NOTE <==

All the publications referred on this CV can be accessed via the provided DOI, by using the official URL <https://www.doi.org/>. This way of accessing an on-line publication is internationally recognized through ISO26324:2012 standard. In case DOI is not available, I provide the publisher ad-hoc URL. The "number of pages" refers to the published journal version, which could differ from the e-print one due to journal format.

==> NOTA IMPORTANTE <==

Todas las publicaciones contenidas en este CV pueden ser accedidas a través del DOI (Digital Object Identifier), empleando la web oficial <https://www.doi.org/>. Esta forma de proporcionar acceso a una publicación on-line está reconocida internacionalmente mediante la norma ISO26324:2012. A través de UNE/AENOR, dicho estándar internacional ISO es reconocido oficialmente en España. En caso de que no haya DOI disponible, se proporciona la dirección web ad-hoc del editor. El "número de páginas" se refiere siempre a la versión publicada en la revista, que podría diferir del e-print por cuestiones de formato.

**Current professional situation****Employing entity:** Universidad Politécnica de Madrid      **Type of entity:** University**Department:** ETSIST**Professional category:** Profesor Ayudante Doctor (Assistant Professor)**Start date:** 01/09/2020**Type of contract:** PAD**Dedication regime:** Full time**Previous positions and activities**

	Employing entity	Professional category	Start date
1	INFN Firenze	Post-doctoral fellowship	01/10/2019
2	Fundación Ramón Areces	Post-doctoral fellowship	01/10/2017
3	Universidad Complutense de Madrid	Contracted by Project FIS2013-41716-P	01/07/2017
4	Universidad Complutense de Madrid	Graduate student: Contract under the FPI program / Contratado con cargo a Programa FPI	01/12/2014
5	Ministerio de Economía y Competitividad	FPI grant / becario FPI	01/12/2012
6	Consejo Superior de Investigaciones Científicas	Summer research grant / Beca JAE-Intro de Introducción a la Investigación	27/06/2011

**1** **Employing entity:** INFN Firenze      **Type of entity:** Public Research Body  
**Professional category:** Post-doctoral fellowship  
**Start-End date:** 01/10/2019 - 31/08/2020      **Duration:** 11 months  
**Type of contract:** Temporary employment contract

**2** **Employing entity:** Fundación Ramón Areces  
**Department:** T30f, TUM - Technische Universität München  
**City employing entity:** Munich, Oberbayern, Germany  
**Professional category:** Post-doctoral fellowship      **Educational Management (Yes/No):** No  
**Start-End date:** 01/10/2017 - 30/09/2019      **Duration:** 2 years  
**Type of contract:** Grant-assisted student (pre or post-doctoral, others)  
**Identify key words:** Experimental results; quantum gravity; Teorías gauge en el retículo y cálculos [eng]; collider Signals; Extensions of standard model; Electroweak interaction; Perturbative QCD; Quantum field theory; Nuclear theory

**3** **Employing entity:** Universidad Complutense de Madrid      **Type of entity:** University  
**Department:** Física de Materiales, Facultad de Ciencias Físicas  
**City employing entity:** Madrid, Community of Madrid, Spain



**Professional category:** Contracted by Project FIS2013-41716-P **Educational Management (Yes/No):** No

**Start-End date:** 01/07/2017 - 30/09/2017 **Duration:** 3 months

**Type of contract:** Temporary employment contract

**Dedication regime:** Full time

**Performed tasks:** Short contract by Project FIS2013-41716-P. Ending computations related with the project purposes.

**4** **Employing entity:** Universidad Complutense de Madrid **Type of entity:** University

**Professional category:** Graduate student: Contract under the FPI program / Contratado con cargo a Programa FPI

**Start-End date:** 01/12/2014 - 01/12/2016 **Duration:** 2 years

**5** **Employing entity:** Ministerio de Economía y Competitividad **Type of entity:** MINECO

**Department:** Departamento de Física Teórica I (UCM), Facultad de Ciencias Físicas

**City employing entity:** Madrid, Community of Madrid, Spain

**Professional category:** FPI grant / becario FPI

**Phone:** (34) 91394 - 5016

**Start-End date:** 01/12/2012 - 30/11/2014 **Duration:** 2 years

**Type of contract:** Grant-assisted student (pre or post-doctoral, others)

**Dedication regime:** Full time

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

**Department:** Instituto de Física Teórica

**Professional category:** Summer research grant / Beca JAE-Intro de Introducción a la Investigación

**Start-End date:** 27/06/2011 - 30/09/2011 **Duration:** 2 months

**Type of contract:** Grant-assisted student (pre or post-doctoral, others)

**Dedication regime:** Full time



## Education

### University education

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

**University degree:** Higher degree

**Name of qualification:** 5 years Degree in Physics (mark 9.63 over 10) / Licenciado en Ciencias Físicas

**Degree awarding entity:** Universidad Complutense de Madrid **Type of entity:** University

**Date of qualification:** 30/06/2012

**Average mark:** Outstanding

**Prize:** Special award for degree

#### Doctorates

**Doctorate programme:** PhD in Physics / Programa Oficial de Doctorado en Física

**Degree awarding entity:** Universidad Complutense de Madrid **Type of entity:** University

**City degree awarding entity:** Madrid, Community of Madrid, Spain

**Date of degree:** 09/06/2016

**European doctorate:** Yes

**Date of certificate:** 09/06/2016

**Thesis title:** Study of the Electroweak Symmetry Breaking Sector // Estudio del Sector de Ruptura de Simetría Electro débil para el LHC

**Thesis co-director:** Antonio Dobado González; Felipe José Llanes Estrada

**Obtained qualification:** Sobresaliente "Cum Laude"

**Recognition of quality:** Yes

**Special doctorate award:** Yes

**Date of award:** 05/07/2017

#### Other postgraduate university studies

##### 1 **Type of education:** Masters

**Postgraduate qualification:** Master in Teaching / Máster Universitario en Formación del Profesorado de Educación Secundaria Obligatoria y Bachillerato, Formación Profesional y Enseñanza de Idiomas

**City degree awarding entity:** Spain

**Degree awarding entity:** Universidad Nacional de Educación a Distancia **Type of entity:** University

**Date of qualification:** 12/11/2017

**Obtained qualification:** 8

##### 2 **Type of education:** Masters

**Postgraduate qualification:** Master in Fundamental Physics / Máster en Física Fundamental

**City degree awarding entity:** Madrid, Community of Madrid, Spain

**Degree awarding entity:** Universidad Complutense de Madrid **Type of entity:** University



**Faculty, institute or centre:** Facultad de Ciencias Físicas

**Date of qualification:** 30/06/2013

**Obtained qualification:** 9.87

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

- 1 Training title:** Patentes y Derechos de Autor: Lo que todo investigador debería saber  
**Awarding entity:** Instituto de Ciencias de la Educación **Type of entity:** University Research Institute  
**End date:** 14/06/2022 **Duration in hours:** 2 hours
- 2 Training title:** PRACE Course: Introduction to hybrid programming in HPC  
**Awarding entity:** Partnership for Advanced Computing in Europe (PRACE)  
**End date:** 29/01/2019 **Duration in hours:** 12 hours
- 3 Training title:** Introduction to the LRZ Supercomputing and Machine Learning Infraestructure  
**Awarding entity:** Leibniz Supercomputing Centre (LRZ) **Type of entity:** University Research Institute  
**End date:** 08/10/2018 **Duration in hours:** 6 hours
- 4 Training title:** PRACE Workhop: Intel Manycore Programming Workshop  
**Awarding entity:** Partnership for Advanced Computing in Europe (PRACE) **Type of entity:** Foundation  
**End date:** 18/07/2018 **Duration in hours:** 18 hours
- 5 Training title:** Fortran Modernization Workshop  
**Awarding entity:** Leibniz Supercomputing Centre (LRZ) **Type of entity:** University Research Institute  
**End date:** 05/06/2018 **Duration in hours:** 14 hours
- 6 Type of training:** Congress  
**Training title:** Resummation, Evolution, Factorization 2017  
**Awarding entity:** Universidad Complutense de Madrid **Type of entity:** University  
**End date:** 16/11/2017 **Duration in hours:** 25 hours
- 7 Type of training:** Course  
**Training title:** JOINT FGZ-PH Summer School on Methods of Effective Field Theory & Lattice Field Theory  
**City awarding entity:** Garching, Germany  
**Awarding entity:** TUM - Technische Universität München **Type of entity:** University  
**End date:** 07/07/2017 **Duration in hours:** 186 hours
- 8 Type of training:** Meeting  
**Training title:** Spanish LHC network meeting  
**City awarding entity:** Madrid, Spain  
**Awarding entity:** Red Española del LHC  
**End date:** 09/05/2017 **Duration in hours:** 16 hours
- 9 Type of training:** Workshop  
**Training title:** The Higgs Couplings 2016 Meeting  
**City awarding entity:** Menlo Park, United States of America  
**Awarding entity:** Stanford Linear Accelerator Center (SLAC)



**End date:** 12/11/2016

**Duration in hours:** 28 hours

**10 Type of training:** Workshop

**Training title:** Exotic Higgs Decay Meeting

**City awarding entity:** Menlo Park, United States of America

**Awarding entity:** Stanford Linear Accelerator Center (SLAC)

**End date:** 08/11/2016

**Duration in hours:** 16 hours

**11 Training title:** 12th Workshop of the LHCHXSWG at CERN

**Awarding entity:** CERN

**Type of entity:** R&D Centre

**End date:** 14/10/2016

**Duration in hours:** 24 hours

**12 Training title:** Preparatory Meeting of the LHC Higgs Cross Section Working Group

**Awarding entity:** CERN

**Type of entity:** R&D Centre

**End date:** 08/07/2016

**Duration in hours:** 16 hours

**13 Type of training:** Course

**Training title:** Tutorial on Monte Carlo Tools for Colliders

**City awarding entity:** Cantoblanco, Community of Madrid, Spain

**Awarding entity:** Instituto de Física Teórica

**Type of entity:** State agency

**End date:** 10/09/2015

**Duration in hours:** 12 hours

**14 Type of training:** Course

**Training title:** 2015 International Summer Workshop on Reaction Theory

**City awarding entity:** Bloomington, IN, United States of America

**Awarding entity:** Indiana University

**Type of entity:** University

**End date:** 19/06/2015

**Duration in hours:** 76 hours

**15 Type of training:** Course

**Training title:** Training program of the 2nd BSC International Doctoral Symposium

**Awarding entity:** Centro Nacional de Supercomputación

**Type of entity:** R&D Centre

**End date:** 06/05/2015

**Duration in hours:** 8 hours

**16 Type of training:** Course

**Training title:** Terascale Monte Carlo School 2014

**City awarding entity:** Hamburgo, Hamburg, Germany

**Awarding entity:** DESY

**Type of entity:** R&D Centre

**End date:** 14/03/2014

**Duration in hours:** 24 hours

**17 Type of training:** Workshop

**Training title:** XLII International Meeting on Fundamental Physics

**City awarding entity:** Benasque, Aragon, Spain

**Awarding entity:** FUNDACION CENTRO DE CIENCIAS DE BENASQUE

**Aims of the entity:** Conocimiento del "estado del arte" en el campo de Altas Energías

**End date:** 01/02/2014

**Duration in hours:** 30 hours

**18 Type of training:** Conferencia

**Training title:** Progress in Computational Mathematics and its influence in other sciences/Avances en las Matemáticas Computacionales y su influencia en otras ciencias

**City awarding entity:** Madrid, Community of Madrid, Spain

**Awarding entity:** ADDLINK SOFTWARE CIENTIFICO, S.L.





**Aims of the entity:** Symbolic and numerica computation, use of Mathematica / Cálculo simbólico y numérico, uso de Mathematica

**End date:** 11/11/2013

**Duration in hours:** 6 hours

**19 Type of training:** Workshop

**Training title:** II Postgraduate Meeting on Theoretical Physics

**Awarding entity:** Instituto de Física Teórica

**Type of entity:** State agency

**Aims of the entity:** Formación orientada a Física de Altas Energías

**End date:** 11/10/2013

**Duration in hours:** 20 hours

**20 Type of training:** Course

**Training title:** Workshop in High Energy Physics 2013 / Taller de Altas Energías (TAE) 2013

**City awarding entity:** Benasque, Aragon, Spain

**Awarding entity:** FUNDACION CENTRO DE CIENCIAS DE BENASQUE

**End date:** 28/09/2013

**Duration in hours:** 71 hours

**21 Training title:** International Symposium: 'Alan Turing's Legacy' / Simposio Internacional: "El legado de Alan Turing"

**Awarding entity:** Fundación Ramón Areces

**Type of entity:** Foundation

**Aims of the entity:** Master studies: Quantum Information and Quantum Computation / Complemento de la asignatura "Información Cuántica y Computación Cuántica" del "Máster en Física Fundamental"

**End date:** 24/11/2012

**Duration in hours:** 12 hours

**22 Type of training:** Scientific Journey

**Training title:** Jornada Científica con ocasión del 70 cumpleaños del Profesor Sebastián Viera Díaz

**Awarding entity:** Universidad Autónoma de Madrid

**Type of entity:** University

**Aims of the entity:** Parte del progr. colab. con el prof. Fernando Sols (publicación en PRD y Trabajo Fin de Máster)

**End date:** 21/09/2012

**Duration in hours:** 5 hours

**23 Type of training:** Course

**Training title:** Workshop in High Energy Physics Complutense 2012 / Taller de Altas Energías Complutense (TAE) 2012

**City awarding entity:** Madrid, Community of Madrid, Spain

**Awarding entity:** Universidad Complutense de Madrid

**Type of entity:** University

**End date:** 27/07/2012

**Duration in hours:** 70 hours

**24 Type of training:** Course

**Training title:** Instrumental developments in Radioastronomy / Desarrollos instrumentales en Radioastronomía

**Awarding entity:** Universidad Nacional de Educación a Distancia

**Type of entity:** University

**End date:** 06/07/2012

**Duration in hours:** 20 hours

**25 Type of training:** Simposio

**Training title:** Symposium Quantum and Optical Dynamics in Transport Phenomena

**Awarding entity:** Centro de Física Miguel Antonio Catalán

**Type of entity:** State agency

**Aims of the entity:** Parte del progr. colab. con el prof. Fernando Sols (publicación en PRD y Trabajo Fin de Máster)

**End date:** 29/06/2012

**Duration in hours:** 6 hours

**26** Type of training: Course

**Training title:** Popular and recreational astronomy: workshop, audiovisual, computational and radio broadcasting / Astronomía popular y recreativa: taller manual, audiovisual, informático y radiofónico

**Awarding entity:** Universidad de Alcalá

**Type of entity:** University

**Training manager:** Javier Bussons Gordo

**End date:** 22/07/2011

**Duration in hours:** 23 hours

**27** Type of training: Course

**Training title:** Astroparticles summer workshop / Astropartículas: ¿de qué está hecho el universo?

**Awarding entity:** Universidad de Alcalá

**Type of entity:** University

**Training manager:** Javier Bussons Gordo

**End date:** 30/07/2010

**Duration in hours:** 25 hours

## Language skills

Language	Listening skills	Reading skills	Spoken interaction	Speaking skills	Writing skills
English	B2	C1	B2	B2	B2

## Teaching experience

### General teaching experience

**1** Type of teaching: Official teaching

**Name of the course:** Matemática Discreta / Discrete Mathematics

**Type of programme:** Bachelor's degree

**Type of subject:** Optional

**University degree:** Graduado o Graduada en Ingeniería de Sistemas de Telecomunicación

**Start date:** 10/02/2023

**End date:** 30/06/2023

**Type of hours/ ECTS credits:** Hours

**Hours/ECTS credits:** 36

**Entity:** Universidad Politécnica de Madrid

**Type of entity:** University

**Faculty, institute or centre:** ETSIST

**2** Type of teaching: Unofficial teaching

**Name of the course:** Quantum Walk Algorithms

**Type of programme:** Master's degree

**Type of subject:** Core

**University degree:** Master in Quantum Computing Technology

**Course given:** 2

**Start date:** 01/02/2023

**End date:** 30/06/2023

**Type of hours/ ECTS credits:** Credits

**Entity:** Universidad Politécnica de Madrid

**Type of entity:** University

**3** Type of teaching: Official teaching

**Name of the course:** Modelos Matemáticos y Matemática Discreta

**Type of programme:** Bachelor's degree

**Type of subject:** Core



**University degree:** Graduado o Graduada en Ingeniería de Sistemas de Datos

**Start date:** 01/02/2023

**End date:** 30/06/2023

**Type of hours/ ECTS credits:** Hours

**Hours/ECTS credits:** 36

**Entity:** Universidad Politécnica de Madrid

**Type of entity:** University

**Faculty, institute or centre:** ETSIST

**4 Type of teaching:** Official teaching

**Name of the course:** Linear Algebra / Álgebra Lineal

**Type of programme:** Bachelor's degree

**Type of subject:** Core

**University degree:** Graduado o Graduada en Ingeniería de Sistemas de Telecomunicaciones

**Start date:** 01/10/2022

**End date:** 31/01/2023

**Type of hours/ ECTS credits:** Hours

**Hours/ECTS credits:** 144

**Entity:** Universidad Politécnica de Madrid

**Type of entity:** University

**Faculty, institute or centre:** ETSIST

**5 Type of teaching:** Official teaching

**Name of the course:** Modelos Matemáticos y Matemática Discreta

**Type of subject:** Core

**University degree:** Graduado o Graduada en Ingeniería de Sistemas de Datos

**Start date:** 01/02/2022

**End date:** 30/06/2022

**Type of hours/ ECTS credits:** Hours

**Hours/ECTS credits:** 36

**Entity:** Universidad Politécnica de Madrid

**Type of entity:** University

**Faculty, institute or centre:** ETSIST

**6 Type of teaching:** Unofficial teaching

**Name of the course:** Quantum Walk Algorithms

**Type of programme:** Master's degree

**Type of subject:** Core

**University degree:** Master in Quantum Computing Technology

**Start date:** 01/02/2022

**End date:** 01/06/2022

**Type of hours/ ECTS credits:** Credits

**Hours/ECTS credits:** 1,5

**Entity:** Universidad Politécnica de Madrid

**Type of entity:** University

**Faculty, institute or centre:** ETSIST

**7 Type of teaching:** Official teaching

**Name of the course:** Linear Algebra / Álgebra Lineal

**Type of programme:** Bachelor's degree

**Type of subject:** Core

**University degree:** Graduado o Graduada en Ingeniería de Sistemas de Telecomunicaciones

**Start date:** 01/10/2021

**End date:** 31/01/2022

**Type of hours/ ECTS credits:** Hours

**Hours/ECTS credits:** 144

**Entity:** Universidad Politécnica de Madrid

**Type of entity:** University

**Faculty, institute or centre:** ETSIST



- 8** **Type of teaching:** Official teaching  
**Name of the course:** Discrete Mathematics / Matemática Discreta  
**Type of programme:** Bachelor's degree  
**Type of subject:** Optional  
**University degree:** Graduado o Graduada en Ingeniería de Sistemas de Telecomunicaciones  
**Start date:** 01/02/2021 **End date:** 30/06/2021  
**Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 30  
**Entity:** Universidad Politécnica de Madrid **Type of entity:** University  
**Faculty, institute or centre:** ETSIST
- 9** **Type of teaching:** Official teaching  
**Name of the course:** Linear Algebra / Álgebra Lineal  
**Type of programme:** Bachelor's degree  
**Type of subject:** Core  
**University degree:** Graduado o Graduada en Ingeniería de Sistemas de Telecomunicaciones  
**Start date:** 01/10/2020 **End date:** 31/01/2021  
**Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 108  
**Entity:** Universidad Politécnica de Madrid **Type of entity:** University  
**Faculty, institute or centre:** ETSIST
- 10** **Type of teaching:** Unofficial teaching  
**Name of the course:** Métodos Estadísticos y Teóricos para el LHC  
**Type of programme:** Doctorate **Type of teaching:** Practical work (classroom-problems)  
**Type of subject:** Doctorate  
**University degree:** Theoretical Physics, Post-Graduate tutorial  
**Start date:** 11/11/2019 **End date:** 20/11/2019  
**Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 8  
**Entity:** Universidad Complutense de Madrid **Type of entity:** University  
**Faculty, institute or centre:** Facultad de Ciencias Físicas  
**Department:** Departamento de Física Teórica
- 11** **Type of teaching:** Unofficial teaching  
**Name of the course:** Métodos Estadísticos y Teóricos para el LHC  
**Type of programme:** Engineering **Type of teaching:** Practical work (classroom-problems)  
**Type of subject:** Doctorate  
**University degree:** Curso de Doctorado (docencia no reglada)  
**Start date:** 11/11/2019 **End date:** 14/11/2019  
**Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 8  
**Entity:** Universidad Complutense de Madrid **Type of entity:** University  
**Faculty, institute or centre:** Facultad de Ciencias Físicas
- 12** **Type of teaching:** Official teaching  
**Name of the course:** Calculus / Cálculo  
**Type of teaching:** Practical work (classroom-problems)  
**Type of subject:** Obligatory  
**University degree:** Degree in Physics / Grado en Física  
**Start date:** 01/02/2016 **End date:** 01/06/2016



**Type of hours/ ECTS credits:** Hours

**Hours/ECTS credits:** 5

**Entity:** Universidad Complutense de Madrid

**Type of entity:** University

**Faculty, institute or centre:** Facultad de Ciencias Físicas

**Department:** Física Teórica I

**13 Type of teaching:** Official teaching

**Name of the course:** Physics of Biological Processes / Física de los Procesos Biológicos

**Type of teaching:** Practical work (classroom-problems)

**Type of subject:** Obligatory

**University degree:** Degree in Biology / Grado en Biología

**Start date:** 01/02/2016

**End date:** 01/06/2016

**Type of hours/ ECTS credits:** Hours

**Hours/ECTS credits:** 15

**Entity:** Universidad Complutense de Madrid

**Type of entity:** University

**Faculty, institute or centre:** Facultad de Ciencias Biológicas

**Department:** Física Teórica I

**14 Type of teaching:** Official teaching

**Name of the course:** Quantum Physics I / Física Cuántica I

**Type of teaching:** Practical work (classroom-problems)

**Type of subject:** Obligatory

**University degree:** Degree in Physics / Grado en Física

**Start date:** 01/02/2015

**End date:** 01/06/2015

**Type of hours/ ECTS credits:** Hours

**Hours/ECTS credits:** 10

**Entity:** Universidad Complutense de Madrid

**Type of entity:** University

**Faculty, institute or centre:** Facultad de Ciencias Físicas

**Department:** Física Teórica I

**15 Type of teaching:** Official teaching

**Name of the course:** Calculus / Cálculo

**Type of teaching:** Practical work (classroom-problems)

**Type of subject:** Obligatory

**University degree:** Degree in Physics / Grado en Física

**Start date:** 01/02/2014

**End date:** 01/06/2014

**Type of hours/ ECTS credits:** Hours

**Hours/ECTS credits:** 15

**Entity:** Universidad Complutense de Madrid

**Type of entity:** University

**Faculty, institute or centre:** Facultad de Ciencias Físicas

**Department:** Física Teórica I

**16 Type of teaching:** Official teaching

**Name of the course:** Physics of Biological Processes / Física de los Procesos Biológicos

**Type of teaching:** Practical work (classroom-problems)

**Type of subject:** Obligatory

**University degree:** Degree in Biology / Grado en Biología

**Start date:** 01/02/2014

**End date:** 01/06/2014

**Type of hours/ ECTS credits:** Hours

**Hours/ECTS credits:** 9

**Entity:** Universidad Complutense de Madrid

**Type of entity:** University



**Faculty, institute or centre:** Facultad de Ciencias Biológicas  
**Department:** Física Teórica I

**17** **Type of teaching:** Official teaching  
**Name of the course:** Quantum Physics I / Física Cuántica I  
**Type of teaching:** Practical work (classroom-problems)  
**Type of subject:** Obligatory  
**University degree:** Degree in Physics / Grado en Física  
**Start date:** 01/02/2014 **End date:** 01/06/2014  
**Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 10  
**Entity:** Universidad Complutense de Madrid **Type of entity:** University  
**Faculty, institute or centre:** Facultad de Ciencias Físicas  
**Department:** Física Teórica I

**18** **Type of teaching:** Official teaching  
**Name of the course:** Computational Laboratory of Nuclear and Particle Physics / Laboratorio Computacional de Física Nuclear y de Partículas  
**Type of teaching:** Laboratory work  
**Type of subject:** Core  
**University degree:** 5 years Degree in Physics / Licenciatura en Ciencias Físicas  
**Start date:** 01/10/2013 **End date:** 01/02/2014  
**Type of hours/ ECTS credits:** Hours  
**Hours/ECTS credits:** 5  
**Entity:** Universidad Complutense de Madrid **Type of entity:** University  
**Faculty, institute or centre:** Facultad de Ciencias Físicas  
**Department:** Física Teórica I

## Experience supervising doctoral thesis and/or final year projects

- 1** **Project title:** Signals of Dark Matter Self-Interaction via Massive Hidden Mediators  
**Type of project:** End of course project  
**Co-director of thesis:** Nora Brambilla; Rafael Delgado López  
**Entity:** Physik-Department T30F, Technische Universität München **Type of entity:** University Department  
**City of entity:** Garching, Oberbayern, Germany  
**Student:** Florian Götz  
**Date of reading:** 06/09/2018
- 2** **Project title:** Desarrollo, implementación y análisis de funcionalidad de un certificado digital basado en el algoritmo RSA  
**Type of project:** End of course project  
**Entity:** Universidad Politécnica de Madrid **Type of entity:** University  
**Student:** Manuel Ruiz Huidobro Macías  
**Obtained qualification:** WORK IN PROGRESS



## Participation in innovative teaching projects

- 1 Project title:** (IN EVALUATION / EN EVALUACIÓN) C4P: Computación Cuántica en las Clases de la Complutense  
**Type of participation:** Team member  
**Name of the main researcher:** Ángel Rivas Vargas  
**Number of participants:** 8  
**Amount awarded:** 1.500 €  
**Funding entity:** Universidad Complutense de Madrid   **Type of entity:** University  
**Participating entity/entities:**  
Universidad Complutense de Madrid   **Type of entity:** University  
Universidad Politécnica de Madrid   **Type of entity:** University  
**Start-End date:** 01/09/2023 - 31/07/2024   **Duration:** 1 year
- 2 Project title:** LHC@COMPLUTENSE  
**Type of participation:** Team member  
**Name of the main researcher:** Felipe José Llanes Estrada  
**Funding entity:** Universidad Complutense de Madrid   **Type of entity:** University  
**Start-End date:** 01/09/2014 - 01/09/2016

## Other activities/achievements not included above

- 1 Description of the activity:** Coordination of Subject / Coordinación de Asignatura: Matemática Discreta  
**Organising entity:** Universidad Politécnica de Madrid   **Type of entity:** University  
**End date:** 30/06/2023
- 2 Description of the activity:** Coordination of Subject / Coordinación de Asignatura: Álgebra Lineal  
**Organising entity:** Universidad Politécnica de Madrid   **Type of entity:** University  
**End date:** 30/06/2023
- 3 Description of the activity:** DOCENTIA (evaluación voluntaria solicitada) / Teaching evaluation (requested / on process)  
**Organising entity:** Universidad Politécnica de Madrid   **Type of entity:** University  
**End date:** 31/03/2023
- 4 Description of the activity:** Curso de innovación docente (1h 30'): Kit de supervivencia para docentes de primeros cursos  
**Organising entity:** Instituto de Ciencias de la Educación   **Type of entity:** University Research Institute  
**End date:** 19/01/2023
- 5 Description of the activity:** Curso de innovación docente (8h): uso de gráficos avanzados con Matlab para docencia e investigación  
**Organising entity:** Instituto de Ciencias de la Educación   **Type of entity:** University Research Institute  
**End date:** 09/07/2022



- 6** **Description of the activity:** Coordination of Subject / Coordinación de Asignatura: Álgebra Lineal  
**Organising entity:** Universidad Politécnica de Madrid **Type of entity:** University  
**End date:** 30/06/2022
- 7** **Description of the activity:** Curso sobre software para docencia (8h): Introducción a R  
**Organising entity:** Instituto de Ciencias de la Educación **Type of entity:** University Research Institute  
**End date:** 15/06/2022
- 8** **Description of the activity:** Curso de innovación docente (4h): Sesiones lectivas interactivas. Dinamiza tus clases con herramientas interactivas y colaborativas  
**Organising entity:** Instituto de Ciencias de la Educación **Type of entity:** University Research Institute  
**End date:** 03/06/2022
- 9** **Description of the activity:** Curso de innovación docente (12h): Flipped classroom: cómo darle la vuelta a tu clase  
**Organising entity:** Instituto de Ciencias de la Educación **Type of entity:** University Research Institute  
**End date:** 25/05/2022
- 10** **Description of the activity:** Coordination of Subject / Coordinación de Asignatura: Matemática Discreta  
**Organising entity:** Universidad Politécnica de Madrid **Type of entity:** University  
**End date:** 30/06/2021
- 11** **Description of the activity:** Teaching Practicum (215h) / Practicum I y II del Máster de Formación del Profesorado (215h)  
**Identify key words:** Mathematics; Chemistry; Physics  
**City of activity:** Guadalajara, Castile-La Mancha, Spain  
**Organising entity:** Universidad Nacional de Educación a Distancia, Colegio Salesiano San José de Guadalajara  
**End date:** 31/05/2017

## 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:** Álgebra Diferencial Efectiva e Integrabilidad (PID2021-124473NB-I00)  
**Entity where project took place:** Universidad Politécnica de Madrid **Type of entity:** University  
**Name principal investigator (PI, Co-PI....):** Sonia Luisa Rueda Pérez; María Ángeles Zurro Moro  
**N° of researchers:** 4  
**Funding entity or bodies:** Ministerio de Ciencia e Innovación. Investigación **Type of entity:** PID2021-124473NB-I00  
**Start-End date:** 01/09/2022 - 01/09/2025  
**Total amount:** 39.930 €





- 2** **Name of the project:** Teorías Efectivas en Física de Altas Energías y Cosmología  
**Type of project:** Basic research (including archaeological digs, etc) **Geographical area:** National  
**Degree of contribution:** Researcher  
**Name principal investigator (PI, Co-PI....):** Antonio Dobado González; Juan José Sanz Cillero  
**Name of the programme:** PROYECTOS DE I+D+i  
**Code according to the funding entity:** PID2019-108655GB-I00  
**Start-End date:** 01/06/2020 - 01/06/2023 **Duration:** 3 years  
**Total amount:** 56.870 €
- 3** **Name of the project:** Teorías Efectivas en Física de Partículas y Cosmología  
**Entity where project took place:** Universidad Complutense de Madrid **Type of entity:** University  
**City of entity:** Madrid, Community of Madrid, Spain  
**Name principal investigator (PI, Co-PI....):** Antonio Dobado González; Felipe J. Llanes-Estrada  
**Funding entity or bodies:** Ministerio de Economía y Competitividad **Type of entity:** MINECO  
**Name of the programme:** Proyectos de I+D de Excelencia 2016  
**Code according to the funding entity:** FPA2016-75654-C2-1-P  
**Start-End date:** 01/01/2017 - 01/01/2020 **Duration:** 3 years  
**Total amount:** 86.000 €  
**Dedication regime:** Full time
- 4** **Name of the project:** Teorías Efectivas en Física de Partículas y Cosmología  
**Entity where project took place:** Universidad Complutense de Madrid **Type of entity:** University  
**City of entity:** Madrid, Community of Madrid, Spain  
**Name principal investigator (PI, Co-PI....):** Antonio Dobado González; Felipe J. Llanes-Estrada  
**Funding entity or bodies:** Ministerio de Economía y Competitividad **Type of entity:** MINECO  
**Name of the programme:** Proyectos de I+D de Excelencia 2014  
**Code according to the funding entity:** FPA2014-53375-C2-1-P  
**Start-End date:** 01/01/2014 - 31/12/2016 **Duration:** 2 years  
**Total amount:** 61.710 €  
**Dedication regime:** Full time
- 5** **Name of the project:** Teorías Efectivas en Física Moderna  
**Entity where project took place:** Universidad Complutense de Madrid **Type of entity:** University  
**City of entity:** Madrid, Community of Madrid, Spain  
**Funding entity or bodies:** Universidad Complutense de Madrid **Type of entity:** University  
**City funding entity:** Madrid, Community of Madrid, Spain  
**Code according to the funding entity:** UCM:910309  
**Start-End date:** 01/12/2012 - 01/12/2016
- 6** **Name of the project:** Teorías Efectivas en Física de Partículas y Cosmología  
**Entity where project took place:** Universidad Complutense de Madrid **Type of entity:** University  
**City of entity:** Madrid, Community of Madrid, Spain



**Name principal investigator (PI, Co-PI...):** Antonio Dobado González

**Funding entity or bodies:**

Ministerio de Economía y Competitividad

**Type of entity:** MINECO

**Name of the programme:** Proyectos de Investigación Fundamental No Orientada

**Code according to the funding entity:** FPA2011-27853-C02-01

**Start-End date:** 01/12/2012 - 31/12/2014

**Total amount:** 60.000 €

**Dedication regime:** Full time

**7 Name of the project:** Dinámica de átomos, moléculas y electrones dirigida por luz o sonido

**Entity where project took place:** Universidad Complutense de Madrid

**Type of entity:** University

**Name principal investigator (PI, Co-PI...):** Charles E. Creffield; Fernando Sols

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

**Name of the project:** COFINANCIACION DE INFRAESTRUCTURAS DE I+D+i DE LA UPM 2022 (associated to PID2021-124473NB-I00)

**Degree of contribution:** Researcher

**Name principal investigator (PI, Co-PI...):** Sonia Luisa Rueda Pérez

**Nº of researchers:** 4

**Funding entity or bodies:**

Universidad Politécnica de Madrid

**Type of entity:** University

**Start date:** 15/12/2022

**Duration:** 15 days

**Total amount:** 7.481,26 €

## Scientific and technological activities

### Scientific production

#### Publications, scientific and technical documents

**1** Nora Brambilla; Rafael Delgado López; Andreas Kronfeld; Viljami Leino; Peter Petreczky; Sebastian Steinbeißer; Antonio Vairo; Johannes Weber. Static Energy in (2+1+12+1+1)-Flavor Lattice QCD: Scale Setting and Charm Effects. Physical Review D. 107 - 074503, pp. 1 - 46. APS, 11/04/2023. ISSN 2470-0010

**DOI:** 10.1103/physrevd.107.074503

**Type of production:** Scientific paper

**Format:** Journal

**Impact source:** ISI

**Category:** Science Edition - ASTRONOMY & ASTROPHYSICS

**Impact index in year of publication:** 5.407

**Journal in the top 25%:** Yes

**Position of publication:** 16

**No. of journals in the cat.:** 69

**Impact source:** ISI

**Category:** Science Edition - PHYSICS, PARTICLES & FIELDS

**Impact index in year of publication:** 5.407

**Journal in the top 25%:** Yes

**Position of publication:** 7

**No. of journals in the cat.:** 29

**Source of citations:** INSPIRE-HEP

**Citations:** 6



- 2** Rafael Delgado López; Antonio Dobado; Domènec Espriu. Seeking for resonances in unitarized one-loop graviton-graviton scattering. *Physical Review D*. 107 - 044073, pp. 1 - 14. APS, 28/02/2023. Available on-line at: <<https://arxiv.org/abs/2207.06070>>. ISSN 2470-0010  
**DOI:** 10.1103/PhysRevD.107.044073  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** Science Edition - ASTRONOMY & ASTROPHYSICS  
**Impact index in year of publication:** 5.407 **Journal in the top 25%:** Yes  
**Position of publication:** 16 **No. of journals in the cat.:** 69  
**Impact source:** ISI **Category:** Science Edition - PHYSICS, PARTICLES & FIELDS  
**Impact index in year of publication:** 5.407 **Journal in the top 25%:** Yes  
**Position of publication:** 7 **No. of journals in the cat.:** 29  
**Source of citations:** INSPIRE-HEP **Citations:** 3
- 3** Rafael Delgado López; Sebastian Steinbeißer; Michael Strickland; Johannes Weber. QuantumFDTD - A computational framework for the relativistic Schrödinger equation. *EPJ Web Conf.* 274, pp. 1 - 7. EPJ Web of Conferences, 22/12/2022. ISSN 2100-014X  
**DOI:** 10.1051/epjconf/202227404004  
**Type of production:** Scientific paper **Format:** Journal  
**Relevant results:** Contributed to the XVth Quark Confinement and the Hadron Spectrum Conference (ConfXV)
- 4** Rafael Delgado López; Antonio Dobado; Domènec Espriu. Unitarized one-loop graviton-graviton scattering. *EPJ Web Conf.* 274 - 08010, pp. 1 - 7. EPJ Web of Conferences, 22/12/2022. ISSN 2100-014X  
**DOI:** 10.1051/epjconf/202227408010  
**Type of production:** Scientific paper **Format:** Journal  
**Relevant results:** Contributed to the XVth Quark Confinement and the Hadron Spectrum Conference (ConfXV)
- 5** Nora Brambilla; Rafael Delgado López; Andreas Kronfeld; Viljami Leino; Peter Petreczky. Charm mass effects in the static energy computed in 2+1+1 flavor lattice QCD. *PoS LATTICE2022*. 430, pp. 1 - 9. Proceedings of Science, 15/12/2022. Available on-line at: <<https://arxiv.org/abs/2212.07665>>. ISSN 1824-8039  
**DOI:** 10.22323/1.430.0089  
**Type of production:** Scientific paper **Format:** Journal  
**Relevant results:** Contribution to: 39th International Symposium on Lattice Field Theory (Lattice 2022), 8-13 August 2022. Bonn, Germany
- 6** Sebastian Steinbeisser; Nora Brambilla; Rafael Delgado López; Andreas Kronfeld; Viljami Leino; Peter Petreczky; Johannes Weber. The static energy in 2+1+1-flavor QCD. The 38th International Symposium on Lattice Field Theory (LATTICE2021). 396, Proceedings of Science, 16/05/2022. ISSN 1824-8039  
**DOI:** 10.22323/1.396.0521  
**Type of production:** Scientific paper **Format:** Journal  
**Corresponding author:** No  
**Source of citations:** INSPIRE-HEP **Citations:** 2  
**Relevant results:** Contributed to the 38th International Symposium on Lattice Field Theory (Lattice 2021), 26-30 July 2021. Online Conference, United States
- 7** José Alberto Ruiz Cembranos; Rafael Delgado López; Héctor Villarrubia Rojo. LHC constraints on hidden gravitons. *JHEP*. 01 - 129, pp. 1 - 9. Springer, 24/01/2022. ISSN 1029-8479  
**DOI:** 10.1007/JHEP01(2022)129

**Type of production:** Scientific paper**Format:** Journal

- 8** Rafael L. Delgado; Sebastian Steinbeißer; Michael Strickland; Johannes H. Weber. The Relativistic Schrödinger Equation through FFTW3: An Extension of quantumfdtd. *Comput.Phys.Commun.* 272 - 108250, pp. 1 - 30. pre-print, 07/12/2021. ISSN 0010-4655

**DOI:** 10.1016/j.cpc.2021.108250**Type of production:** Scientific paper**Format:** Journal**Corresponding author:** Yes**Impact source:** ISI**Category:** Science Edition - PHYSICS, MATHEMATICAL**Impact index in year of publication:** 4.717**Journal in the top 25%:** Yes**Position of publication:** 2**No. of journals in the cat.:** 56**Impact source:** ISI**Category:** Science Edition - COMPUTER SCIENCE, INTERDISCIPLINARY APPLICATIONS**Impact index in year of publication:** 4.717**Journal in the top 25%:** No**Position of publication:** 38**No. of journals in the cat.:** 112**Source of citations:** WOS**Citations:** 1**Source of citations:** INSPIRE-HEP**Citations:** 4**Relevant results:** Source code on URL: [https://github.com/quantumfdtd/quantumfdtd\\_v3](https://github.com/quantumfdtd/quantumfdtd_v3)

- 9** Antonio Dobado; Felipe Llanes-Estrada J.; Alexandre Salas Bernardez; Rafael Delgado López. Resonances in unitarized HEFT at the LHC. *PoS EPS-HEP2019.* 362, pp. 4. Proceedings of Science, 28/10/2019. ISSN 1824-8039

**DOI:** 10.22323/1.364.0362**Type of production:** Scientific paper**Format:** Journal**Source of citations:** INSPIRE-HEP**Citations:** 1**Relevant results:** Contributed to the 2019 European Physical Society Conference on High Energy Physics (EPS-HEP2019), 10-17 July 2019. Ghent, Belgium

- 10** Rafael Delgado López; Claudia García García; María José Herrero Solans. Dynamical vector resonances from the EChL in VBS at the LHC: the WW case. *JHEP.* 1911 - 065, 12/09/2019. ISSN 1029-8479

**DOI:** 10.1007/JHEP11(2019)065**Type of production:** Scientific paper**Impact source:** ISI**Category:** PHYSICS, PARTICLES & FIELDS**Impact index in year of publication:** 6.376**Journal in the top 25%:** Yes**Position of publication:** 6**No. of journals in the cat.:** 29**Source of citations:** WOS**Citations:** 5**Source of citations:** INSPIRE-HEP**Citations:** 9

- 11** Rafael Delgado López; Antonio Dobado; Domènec Espriu; Claudia García García; María José Herrero Solans; Xavier Marcano; Juan José Sanz Cillero. Collider phenomenology of vector resonances in WZ scattering processes. *PoS Confinement2018 (2019)* 220. 220, pp. 1 - 10. 21/11/2018. ISSN 1824-8039

**DOI:** 10.22323/1.336.0220**Type of production:** Scientific paper**Format:** Journal**Corresponding author:** Yes**Source of citations:** INSPIRE-HEP**Citations:** 3



**Relevant results:** Contributed to the 13th Conference on Quark Confinement and the Hadron Spectrum (Confinement XIII). 31 Jul - 06 Aug 2018. Maynooth, Ireland

- 12** Rafael Delgado López; Antonio Dobado; Felipe Llanes-Estrada. Unitarized HEFT for strongly interacting longitudinal electroweak gauge bosons with resonances. PoS LHCP2018. 004, Proceedings of Science, 14/08/2018. ISSN 1824-8039  
**DOI:** 10.22323/1.321.0004  
**Type of production:** Scientific paper **Format:** Journal  
**Relevant results:** Contributed to the 6th Large Hadron Collider Physics Conference (LHCP 2018), 4-9 June 2018, Bologna, Italy
- 13** Felipe L. Llanes Estrada; Rafael Delgado López; Antonio Dobado González. Electroweak resonances in HEFT. PoS EPS-HEP2017. 314, pp. 1 - 5. Proceedings of Science, 20/03/2018. Available on-line at: <<http://arxiv.org/abs/arXiv:1709.10491>>. ISSN 1824-8039  
**DOI:** 10.22323/1.314.0278 : 1627891  
**Type of production:** Scientific paper **Format:** Journal  
**Source of citations:** INSPIRE-HEP **Citations:** 1  
**Relevant results:** 4+1 pages, 7 plots. Contribution to the EPS conference on High Energy Physics, Venice, Italy, 5th-12th July 2017.
- 14** Rafael Delgado López; Antonio Dobado; Domènec Espriu; Claudia García García; María Jesús Herrero; Xavier Marcano; Juan José Sanz Cillero. Production of vector resonances at the LHC via WZ-scattering: a unitarized EChL analysis. JHEP. 1711 - 098, pp. 1 - 48. Springer, 16/11/2017. ISSN 1029-8479  
**DOI:** 10.1007/JHEP11(2017)098  
**Type of production:** Scientific paper **Format:** Journal  
**Position of signature:** 1 **Degree of contribution:** Author or co-author of article in journal with external admissions assessment committee  
**Total no. authors:** 7  
**Impact source:** ISI **Category:** Science Edition - PHYSICS, PARTICLES & FIELDS  
**Impact index in year of publication:** 5.541 **Journal in the top 25%:** Yes  
**Position of publication:** 4 **No. of journals in the cat.:** 29  
**Source of citations:** WOS **Citations:** 20  
**Source of citations:** INSPIRE-HEP **Citations:** 37  
**Relevant results:** 48 pages, 23 figures, 3 tables
- 15** Rafael Delgado López; Antonio Dobado González; Miguel Espada; Felipe J. Llanes Estrada; Iván León Merino. Collider production of electroweak resonances from  $\gamma\gamma$  states. JHEP. 1811 - 010, pp. 1 - 36. Springer, 20/10/2017. ISSN 1029-8479  
**DOI:** 10.1007/JHEP11(2018)010 : 1631811  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** Science Edition - PHYSICS, PARTICLES & FIELDS  
**Impact index in year of publication:** 5.541 **Journal in the top 25%:** Yes  
**Position of publication:** 4 **No. of journals in the cat.:** 29  
**Source of citations:** WOS **Citations:** 6  
**Source of citations:** INSPIRE-HEP **Citations:** 10

- 16** Rafael L. Delgado; Antonio Dobado; Felipe J. Llanes-Estrada. Coupling WW, ZZ unitarized amplitudes to  $\gamma\gamma$  in the TeV region. EPJC. 77 - 4, pp. 205-1 - 205-13. Springer, 2017. ISSN 1434-6044  
**DOI:** 10.1140/epjc/s10052-017-4768-y  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI **Category:** PHYSICS, PARTICLES & FIELDS  
**Impact index in year of publication:** 5.172 **Journal in the top 25%:** Yes  
**Position of publication:** 5 **No. of journals in the cat.:** 29  
**Source of citations:** WOS **Citations:** 9  
**Source of citations:** INSPIRE-HEP **Citations:** 15  
**Relevant results:** 13 pages, 9 figures
- 17** Rafael Delgado. Coupling of tt and  $\gamma\gamma$  with a strongly interacting Electroweak Symmetry Breaking Sector. EPJ Web Conf. 137, pp. 10001-1 - 10001-9. Springer, 2017. ISSN 2100-014X  
**DOI:** 10.1051/epjconf/201713710001  
**Type of production:** Scientific paper  
**Relevant results:** 9 pages, 3 figures. Contributions to the Procs. of the XIIth Quark Confinement and the Hadron Spectrum, Thessaloniki, Greece, August 2016.
- 18** Rafael Delgado López; Antonio Dobado González; María José Herrero Solans; Juan José Sanz Cillero. Electroweak chiral Lagrangians and  $\gamma\gamma \rightarrow ZL ZL, WL+ WL-$  at One Loop. Proceedings of the Second Annual LHCP. 273, pp. 703 - 709. Scientific Publishing Services at SLAC, 01/06/2016. Available on-line at: <<http://www.slac.stanford.edu/econf/C140602.2/papers/1409.3983v1.pdf>>.  
**Type of production:** Scientific paper  
**Source of citations:** INSPIRE-HEP **Citations:** 2  
**Relevant results:** 6 pages, 8 eps figures. Proceedings of the 37th International Conference on High Energy Physics (ICHEP 2014), Valencia (Spain), 2nd-9th July 2014.
- 19** Rafael L. Delgado; Antonio Dobado; Felipe J. Llanes-Estrada. A Strongly Interacting Electroweak Symmetry Breaking Sector with a Higgs-like light scalar. AIP Conf. Proc.1701, pp. 090003-1 - 090003-9. AIP, 2016. ISSN 0094-243X  
**DOI:** 10.1063/1.4938705  
**Type of production:** Scientific paper **Format:** Journal  
**Source of citations:** WOS **Citations:** 2  
**Source of citations:** INSPIRE-HEP **Citations:** 4  
**Relevant results:** 9 pages, 10 figures. Proceedings of the XIth Quark Confinement and the Hadron Spectrum, 8-12 September, 2014, Saint-Petersburg, Russia.
- 20** R. L. Delgado; A. Dobado; M. J. Herrero; J. J. Sanz-Cillero. Electroweak chiral Lagrangian with a light Higgs and  $\gamma\gamma \rightarrow ZL ZL, WL+ WL-$  scattering at one loop. Nucl. Part. Phys. Proc.273-275, pp. 703 - 709. Elsevier, 2016. ISSN 2405-6014  
**DOI:** 10.1016/j.nuclphysbps.2015.09.107  
**Type of production:** Scientific paper **Format:** Journal  
**Source of citations:** WOS **Citations:** 2  
**Source of citations:** INSPIRE-HEP **Citations:** 1  
**Relevant results:** 7 pages, 8 eps figures. Proceedings of the 37th International Conference on High Energy Physics (ICHEP 2014), Valencia (Spain), 2nd-9th July 2014.



- 21** Rafael L. Delgado; Antonio Dobado; Felipe J. Llanes-Estrada. Strongly interacting WL WL, ZL ZL and hh from unitarized one-loop computations. Nucl. Part. Phys. Proc.273-275, pp. 2436 - 2438. Elsevier, 2016. ISSN 2405-6014  
**DOI:** 10.1016/j.nuclphysbps.2015.09.417  
**Type of production:** Scientific paper **Format:** Journal  
**Source of citations:** WOS **Citations:** 2  
**Source of citations:** INSPIRE-HEP **Citations:** 1  
**Relevant results:** 3 pages, 3 figures, ICHEP2014 Proceedings.
- 22** Andrés Castillo; Rafael L. Delgado; Antonio Dobado; Felipe J. Llanes-Estrada. Top-antitop production from WL+ WL- and ZL ZL scattering under a strongly-interacting symmetry-breaking sector. EPJC. 77, pp. 436-1 - 436-14. Springer, 2016. ISSN 1434-6044  
**DOI:** 10.1140/epjc/s10052-017-4991-6  
**Type of production:** Scientific paper **Format:** Journal  
**Position of signature:** 2  
**Total no. authors:** 4  
**Impact source:** ISI **Category:** Science Edition - PHYSICS, PARTICLES & FIELDS  
**Impact index in year of publication:** 5172 **Journal in the top 25%:** Yes  
**Position of publication:** 5 **No. of journals in the cat.:** 29  
**Source of citations:** WOS **Citations:** 6  
**Source of citations:** INSPIRE-HEP **Citations:** 17  
**Relevant results:** 14 pages, 12 figures
- 23** Antonio Dobado González; Rafael Delgado López; Felipe José Llanes Estrada; Domenec Espriu. Comparing mesons and WL WL TeV-resonances. Bled Workshops Phys.16 - 1, pp. 1 - 8. 14/10/2015. Available on-line at: <<http://www-f1.ijs.si/BledPub/bled2015.pdf>>. ISSN 1580-4992  
**Type of production:** Scientific paper  
**Corresponding author:** No  
**Source of citations:** INSPIRE-HEP **Citations:** 3  
**Relevant results:** 8 pages, 10 plots. Proceedings of the Bled miniworkshop "Exploring hadron resonances", July 5th-11th 2015.
- 24** Antonio Dobado González; Rafael Delgado López; Felipe José Llanes Estrada. Resonances in WL WL, ZL ZL and hh scattering from dispersive analysis of the non-linear Electroweak+Higgs Effective Theory. PoS EPS-HEP2015. 173, pp. 1 - 6. 15/09/2015. Available on-line at: <[http://pos.sissa.it/archive/conferences/234/173/EPS-HEP2015\\_173.pdf](http://pos.sissa.it/archive/conferences/234/173/EPS-HEP2015_173.pdf)>. ISSN 1824-8039  
**Type of production:** Scientific paper  
**Corresponding author:** No  
**Source of citations:** INSPIRE-HEP **Citations:** 3  
**Relevant results:** 6 pages, 12 plots. Presented at the 2015 European Physical Society Conference on High Energy Physics (EPS-HEP 2015), 22-29 Jul 2015, Vienna, Austria.
- 25** Delgado, Rafael L.; Dobado, Antonio; Llanes-Estrada, Felipe J.. Possible New Resonance from WL WL - hh Interchannel Coupling. Phys. Rev. Lett.114 - 22, pp. 221803-1 - 221803-5. AMER PHYSICAL SOC, 04/06/2015. ISSN 0031-9007  
**DOI:** 10.1103/PhysRevLett.114.221803  
**Type of production:** Scientific paper **Format:** Journal  
**Impact source:** ISI

**Impact index in year of publication:** 7.645**Position of publication:** 6**Source of citations:** WOS**Source of citations:** INSPIRE-HEP**Relevant results:** 5 pages, 7 figures**Category:** Science Edition - PHYSICS, MULTIDISCIPLINARY**Journal in the top 25%:** Yes**No. of journals in the cat.:** 79**Citations:** 22**Citations:** 33

- 26** Delgado, Rafael L.; Dobado, Antonio; Llanes-Estrada, Felipe J.. Unitarity, analyticity, dispersion relations, and resonances in strongly interacting WL WL, ZL ZL, and hh scattering. Phys. Rev. D. 91 - 7, pp. 075017-1 - 075017-36. AMER PHYSICAL SOC, 27/04/2015. ISSN 2470-0010

**DOI:** 10.1103/PhysRevD.91.075017**Type of production:** Scientific paper**Impact source:** ISI**Impact index in year of publication:** 4.506**Position of publication:** 16**Impact source:** ISI**Impact index in year of publication:** 4.506**Position of publication:** 8**Source of citations:** WOS**Source of citations:** INSPIRE-HEP**Relevant results:** 36 pages, 28 figures**Format:** Journal**Category:** Science Edition - ASTRONOMY & ASTROPHYSICS**Journal in the top 25%:** No**No. of journals in the cat.:** 62**Category:** Science Edition - PHYSICS, PARTICLES & FIELDS**Journal in the top 25%:** No**No. of journals in the cat.:** 28**Citations:** 34**Citations:** 48

- 27** Felipe José Llanes Estrada; Antonio Dobado González; Rafael Delgado López. Describing 2-TeV scale WLWL resonances with Unitarized Effective Theory. Bled Workshops Phys.16 - 2, pp. 78 - 86. 2015. Available on-line at: <<http://bsm.fmf.uni-lj.si/bled2015bsm/talks/BledVol16No2procFinal.pdf>>. ISSN 1580-4992

**Type of production:** Scientific paper**Corresponding author:** No**Source of citations:** INSPIRE-HEP**Relevant results:** 9 pages, 12 graphs. Contribution to the proceedings of the XVIIIth workshop "What Comes Beyond the Standard Models?", Bled, Slovenia, July 11th-19th 2015.**Format:** Journal**Citations:** 5

- 28** Delgado, R. L.; Dobado, A.; Herrero, M. J.; Sanz-Cillero, J. J.. One-loop  $\gamma\gamma \rightarrow WL+WL-$  and  $\gamma\gamma \rightarrow ZLZL$  from the Electroweak Chiral Lagrangian with a light Higgs-like scalar. JHEP. 149 - 7, pp. 1 - 41. Springer, 29/07/2014. ISSN 1029-8479

**DOI:** 10.1007/JHEP07(2014)149**Type of production:** Scientific paper**Impact source:** ISI**Impact index in year of publication:** 6.111**Position of publication:** 3**Source of citations:** WOS**Source of citations:** INSPIRE-HEP**Relevant results:** 41 pages, 5 figures**Format:** Journal**Category:** Science Edition - PHYSICS, PARTICLES & FIELDS**Journal in the top 25%:** Yes**No. of journals in the cat.:** 27**Citations:** 44**Citations:** 72





- 29** Delgado, Rafael L.; Dobado, Antonio; Llanes-Estrada, Felipe J.. One-loop WL WL and ZL ZL scattering from the electroweak Chiral Lagrangian with a light Higgs-like scalar. JHEP. 121 - 2, pp. 1 - 31. Springer, 27/02/2014. ISSN 1029-8479  
**DOI:** 10.1007/JHEP02(2014)121  
**Type of production:** Scientific paper  
**Impact source:** ISI  
**Impact index in year of publication:** 6.111  
**Position of publication:** 3  
**Source of citations:** WOS  
**Source of citations:** INSPIRE-HEP  
**Relevant results:** 31 pages, 19 plots, 9 Feynman-diagram sets  
**Format:** Journal  
**Category:** Science Edition - PHYSICS, PARTICLES & FIELDS  
**Journal in the top 25%:** Yes  
**No. of journals in the cat.:** 27  
**Citations:** 48  
**Citations:** 80
- 30** Delgado, Rafael L.; Dobado, Antonio; Llanes-Estrada, Felipe J.. Light 'Higgs', yet strong interactions. J.Phys. G. 41 - 025002, pp. 1 - 28. IOP Publishing LTD, 01/02/2014. ISSN 0954-3899  
**DOI:** 10.1088/0954-3899/41/2/025002  
**Type of production:** Scientific paper  
**Impact source:** ISI  
**Impact index in year of publication:** 2.777  
**Position of publication:** 11  
**Impact source:** ISI  
**Impact index in year of publication:** 2.777  
**Position of publication:** 7  
**Source of citations:** WOS  
**Source of citations:** INSPIRE-HEP  
**Relevant results:** 28 pages, 24 plots Appears on the 'Highlights of 2014' of the Journal, and on the portrait.  
**Format:** Journal  
**Category:** Science Edition - PHYSICS, PARTICLES & FIELDS  
**Journal in the top 25%:** No  
**No. of journals in the cat.:** 27  
**Category:** Science Edition - PHYSICS, NUCLEAR  
**Journal in the top 25%:** No  
**No. of journals in the cat.:** 21  
**Citations:** 39  
**Citations:** 49
- 31** Antonio Dobado; Rafael L. Delgado; Felipe J. Llanes-Estrada. Strongly Interacting Electroweak Symmetry Breaking Sector with a Higgs-like light scalar. AIP Conf. Proc.1606, pp. 151 - 158. 2014. ISSN 0094-243X  
**DOI:** 10.1063/1.4891127  
**Type of production:** Scientific paper  
**Source of citations:** WOS  
**Source of citations:** INSPIRE-HEP  
**Relevant results:** 8 pages, 5 figures. Delivered at the II Russian-Spanish Congress "Particle and Nuclear Physics at all Scales and Cosmology" Institute of Cosmos Sciences, Saint-Petersburg, October 1-4, 2013.  
**Format:** Journal  
**Citations:** 2  
**Citations:** 3
- 32** Delgado, R. L.; Hidalgo-Duque, Carlos; Llanes-Estrada, Felipe J.. To What Extent is Gluon Confinement an Empirical Fact?. Few Body Syst.54 - 11, pp. 1705 - 1717. Springer WIEN, 01/11/2013. ISSN 0177-7963  
**DOI:** 10.1007/s00601-012-0500-5  
**Type of production:** Scientific paper  
**Impact source:** ISI  
**Impact index in year of publication:** 1.508  
**Position of publication:** 30  
**Source of citations:** WOS  
**Format:** Journal  
**Category:** Science Edition - PHYSICS, MULTIDISCIPLINARY  
**Journal in the top 25%:** No  
**No. of journals in the cat.:** 78  
**Citations:** 4

**Source of citations:** INSPIRE-HEP**Citations:** 8**Relevant results:** 13 pages, 12 figures

- 33** Cembranos, Jose A. R.; Delgado, Rafael L.; Dobado, Antonio. Brane worlds at the LHC: Branons and KK gravitons. Phys. Rev. D. 88 - 7, pp. 075021-1 - 075021-11. AMER PHYSICAL SOC, 29/10/2013. ISSN 1550-2368  
**DOI:** 10.1103/PhysRevD.88.075021

**Type of production:** Scientific paper**Format:** Journal**Impact source:** ISI**Category:** Science Edition - ASTRONOMY & ASTROPHYSICS**Impact index in year of publication:** 4.864**Journal in the top 25%:** Yes**Position of publication:** 12**No. of journals in the cat.:** 59**Impact source:** ISI**Category:** Science Edition - PHYSICS, PARTICLES & FIELDS**Impact index in year of publication:** 4.864**Journal in the top 25%:** Yes**Position of publication:** 6**No. of journals in the cat.:** 27**Source of citations:** WOS**Citations:** 21**Source of citations:** INSPIRE-HEP**Citations:** 29**Relevant results:** 11 pages, 3 figures

- 34** Delgado, R. L.; Bargueno, P.; Sols, F.. Two-step condensation of the charged Bose gas. Phys. Rev. E. 86 - 3, pp. 031102-1 - 031102-5. AMER PHYSICAL SOC, 04/09/2012. ISSN 1539-3755

**DOI:** 10.1103/PhysRevE.86.031102**Type of production:** Scientific paper**Format:** Journal**Impact source:** ISI**Category:** Science Edition - PHYSICS, FLUIDS & PLASMAS**Impact index in year of publication:** 2.313**Journal in the top 25%:** No**Position of publication:** 10**No. of journals in the cat.:** 31**Impact source:** ISI**Category:** Science Edition - PHYSICS, MATHEMATICAL**Impact index in year of publication:** 2.313**Journal in the top 25%:** Yes**Position of publication:** 6**No. of journals in the cat.:** 55**Source of citations:** WOS**Citations:** 7**Source of citations:** NASA-ADS**Citations:** 4**Relevant results:** 5 pages, 3 figures

- 35** Rafael Delgado López; Antonio Dobado; Domènec Espriu; Claudia García García; María José Herrero. Resonant  $pp \rightarrow W+Zjjpp \rightarrow W+Zjj$  events at the LHC from a unitarized study of the EChL. e-Print: 1805.04870 [hep-ph]. pp. 403 - 406. arXiv (eprint), Available on-line at: <[https://moriond.in2p3.fr/Proceedings/2018/Moriond\\_EW\\_2018.pdf](https://moriond.in2p3.fr/Proceedings/2018/Moriond_EW_2018.pdf)>. ISBN 9791096879076

**Type of production:** Scientific paper**Format:** Journal**Relevant results:** Part of Proceedings, 53rd Rencontres de Moriond on Electroweak Interactions and Unified Theories (Moriond EW 2018) : La Thuile, Italy, March 10-17, 2018

- 36** José Alberto Ruiz Cembranos; Clara Álvarez Luna; Rafael Delgado López; Luis J. Garay; Antonio López Maroto. Ultralight Dark Matter Candidates. Particle Physics at the Year of 150th Anniversary of the Mendeleev's Periodic Table of Chemical Elements. pp. 420 - 423. World Scientific, 2021. ISBN 978-981-123-390-6

**DOI:** 10.1142/9789811233913\_0076



**Type of production:** Book chapter

**Format:** Book

**Relevant results:** Contribution to: 19th Lomonosov Conference on Elementary Particle Physics, 420-423

- 37** Handbook of LHC Higgs cross sections: 4. Deciphering the nature of the Higgs sector. Working Group 2 Nonlinear EFT. pp. 340 - 355. Geneva(Switzerland): CERN, 06/04/2017. Available on-line at: <<https://inspirehep.net/record/1494411>>. ISSN 2519-8068, ISBN 978-92-9083-442-7

**DOI:** 10.23731/CYRM-2017-002

: CERN-2017-002-M

**Type of production:** Book chapter

**Format:** Book

**Degree of contribution:** Author or co-author of chapter in book

**Corresponding author:** No

**Source of citations:** INSPIRE-HEP and arXiv

**Citations:** 3.374

**Relevant results:** "Note: 869 pages, 295 figures, 248 tables and 1645 citations. Working Group web page: <https://twiki.cern.ch/twiki/bin/view/LHCPhysics/LHCHXSWG>" The 1645 citations are on top of the 1902 that appear on INSPIRE-HEP

- 38** 1; Rafael Delgado Lopez. Study of the Electroweak Symmetry Breaking Sector for the LHC. Springer Theses. pp. 1 - 197. Springer International Publishing, 2017. ISSN 2190-5053, ISBN 978-3-319-60497-8

**DOI:** 10.1007/978-3-319-60498-5

**Collection:** Springer Theses

**Type of production:** Scientific book or monograph

**Format:** Book

**Position of signature:** 1

**Total no. authors:** 1

**Corresponding author:** Yes

**Relevant results:** 197 pages. This publication is the core prize of the Springer Theses Award.

- 39** VBSCan Mid-Term Scientific Meeting. VBSCan-PUB-02-20. VBSCan COST Network, 03/04/2020. Available on-line at: <<https://cds.cern.ch/record/2715332>>.

**Type of production:** Scientific-technical report

**Format:** Scientific and technical document or report

**Source of citations:** INSPIRE-HEP

**Citations:** 2

**Relevant results:** Editor of this Report; pre-print numbers: arXiv:2004.00726 ; VBSCan-PUB-02-20 ; UWThPh 2020-3 ; IFIRSE-TH-2019-6 ; DESY-20-026 ; TIF-UNIMI-2020-13 ; Cavendish-HEP-20/02 ; CERN-TH-2019-167

## Works submitted to national or international conferences

- 1** **Title of the work:** QuantumFDTD - A computational framework for the relativistic Schrödinger equation  
**Name of the conference:** 15th Conference on Quark Confinement and the Hadron Spectrum (Confinement XV)  
**Type of event:** Conference  
**Corresponding author:** Yes  
**City of event:** Stavanger, Norway  
**Date of event:** 01/08/2022  
**End date:** 06/08/2022  
**Organising entity:** Local organizing committee at the **Type of entity:** University Department  
University of Stavanger  
Rafael Delgado López; Sebastian Steinbeißer; Michael Strickland; Johannes Weber.
- 2** **Title of the work:** Unitarized one-loop graviton-graviton scattering  
**Name of the conference:** 15th Conference on Quark Confinement and the Hadron Spectrum (Confinement XV)  
**Type of event:** Conference



**City of event:** Stavanger, Norway

**Date of event:** 01/08/2022

**End date:** 06/08/2022

**Organising entity:** Local organizing committee at the **Type of entity:** University Department  
University of Stavanger

Rafael Delgado López; Antonio Dobado; Domènec Espriu.

- 3** **Title of the work:** Vector Resonances in VBS  
**Name of the conference:** Baryon and Lepton Number Violation  
**Corresponding author:** Yes  
**City of event:** Madrid, Community of Madrid, Spain  
**Date of event:** 21/10/2019  
**End date:** 24/10/2019  
**Organising entity:** IFT CSIC/UAM  
Rafael Delgado.
- 4** **Title of the work:** EFT Validity and Unitarity for Tri/Multi-Boson Signatures  
**Name of the conference:** Multi-Boson Interactions 2019  
**Corresponding author:** Yes  
**City of event:** Thessaloniki, Greece  
**Date of event:** 26/08/2019  
**End date:** 28/08/2019
- 5** **Title of the work:** Unitary predictions for dynamical vector resonances emerging at VBS-LHC  
**Name of the conference:** XXXVII Reunión Bienal de la Real Sociedad Española de Física  
**City of event:** Zaragoza, Aragon, Spain  
**Date of event:** 15/07/2019  
**End date:** 19/07/2019  
**Organising entity:** Universidad de Zaragoza      **Type of entity:** University
- 6** **Title of the work:** Perspectives for Vector Boson Scattering in the FullyHadronic Channel  
**Name of the conference:** XLVII International Meeting on Fundamental Physics  
**Corresponding author:** Yes  
**City of event:** Aranjuez, Community of Madrid, Spain  
**Date of event:** 03/06/2019  
**End date:** 07/06/2019
- 7** **Title of the work:** Unitary EChL predictions with MadGraph 5 for dynamical vector resonances emerging at VBS-LHC  
**Name of the conference:** Higgs and Effective Field Theory - HEFT 2019  
**Corresponding author:** Yes  
**City of event:** Brussel, Belgium  
**Date of event:** 15/04/2019  
**End date:** 18/04/2019  
**Organising entity:** Université catholique de Louvain, Vrije Universiteit Brussel, Center for Cosmology and Particle Physics Phenomenology (CP3)
- 8** **Title of the work:** Collider phenomenology of dynamical vector resonances emerging at VBS-LHC  
**Name of the conference:** ICCUB Invited Seminar  
**Corresponding author:** Yes  
**City of event:** Barcelona, Catalonia, Spain



**Date of event:** 09/04/2019

**Organising entity:** Universitat de Barcelona

**Type of entity:** University

**9 Title of the work:** Hidden graviton phenomenology in C2PAP

**Name of the conference:** Science Week 2018

**Corresponding author:** Yes

**City of event:** Seeon, Oberbayern, Germany

**Date of event:** 03/12/2018

**End date:** 06/12/2018

**Organising entity:** Excellence Universe Cluster

**Type of entity:** University Centres and Structures and Associated Bodies

**City organizing entity:** Garching, Oberbayern, Germany

Rafael Delgado López; José Alberto Ruiz Cembranos; Antonio López Maroto; Héctor Villarrubia.

**10 Title of the work:** Collider phenomenology of vector resonances in WZ scattering processes

**Name of the conference:** 13th Conference on Quark Confinement and the Hadron Spectrum (Confinement XIII)

**Corresponding author:** Yes

**City of event:** Maynooth, Ireland

**Date of event:** 31/07/2018

**End date:** 06/08/2018

**Organising entity:** Maynooth University

**Type of entity:** University

Rafael Delgado López; Antonio Dobado; Domènec Espriu; Claudia García García; María José Herrero Solans; Xavier Marcano; Juan José Sanz Cillero.

**11 Title of the work:** EFT's: a road from perturbative EW to lattice QCD

**Name of the conference:** Seminar at the UCM

**Corresponding author:** Yes

**City of event:** Madrid, Community of Madrid, Spain

**Date of event:** 27/04/2018

**Organising entity:** Universidad Complutense de Madrid (UCM)

**12 Title of the work:** Overview of VBS processes in the chiral Lagrangian

**Name of the conference:** VBS EFT comparison studies (internal meeting)

**Corresponding author:** Yes

**City of event:** Milan, Lombardia, Italy

**Date of event:** 26/04/2018

**End date:** 28/04/2018

**Organising entity:** COST Action CA16108

**13 Title of the work:** EWSBS phenomenology in diphoton events

**Name of the conference:** Higgs Effective Field Theory 2018 (HEFT 2018)

**Corresponding author:** Yes

**City of event:** Mainz, Rheinhessen-Pfalz, Germany

**Date of event:** 16/04/2018

**End date:** 19/04/2018

**Organising entity:** Mainz Institute for Theoretical Physics (MITP)

**Type of entity:** R&D Centre

**City organizing entity:** Mainz, Rheinhessen-Pfalz, Germany



- 14** **Title of the work:** Unitarized EFT for a strongly interacting BSM Electroweak Sector coupled with  $t\bar{t}$   
**Name of the conference:** XXXVI Reunión Bienal de la Real Sociedad Española de Física  
**Corresponding author:** Yes  
**City of event:** Gijón, Principality of Asturias, Spain  
**Date of event:** 17/07/2017  
**End date:** 21/07/2017  
**Organising entity:** REAL SOCIEDAD ESPAÑOLA DE FISICA
- 15** **Title of the work:** Unitarized EFT for a strongly interacting BSM Electroweak Sector (poster & talk)  
**Name of the conference:** JOINT FGZ-PH Summer School on Methods of Effective Field Theory & Lattice Field Theory  
**Corresponding author:** Yes  
**City of event:** Garching, Germany  
**Date of event:** 26/06/2017  
**End date:** 07/07/2017  
**Organising entity:** TUM - Technische Universität München
- 16** **Title of the work:** Unitarized EFT for a strongly interacting BSM Electroweak Sector  
**Name of the conference:** Invited Seminar at IFIC  
**Corresponding author:** Yes  
**City of event:** Paterna, Valencian Community, Spain  
**Date of event:** 19/06/2017  
**End date:** 19/06/2017  
**Organising entity:** Instituto de Física Corpuscular    **Type of entity:** State agency
- 17** **Title of the work:** Coupling of  $t\bar{t}$  with a strongly interacting EWSBS  
**Name of the conference:** XII Quark Confinement and the Hadron Spectrum  
**Type of event:** Conference  
**Type of participation:** 'Participatory - poster  
**Corresponding author:** Yes  
**City of event:** Thessaloniki, Kentriki Makedonia, Greece  
**Date of event:** 28/08/2016  
**End date:** 05/09/2016  
Rafael Delgado López; Andrés Fernando Castillo Ramírez; Antonio Dobado González; Felipe José Llanes Estrada.
- 18** **Title of the work:** Strongly Interacting EWSBS resonances in the diphoton channel  
**Name of the conference:** XII Quark Confinement and the Hadron Spectrum  
**Type of event:** Conference  
**Type of participation:** Participatory - oral communication  
**Corresponding author:** Yes  
**City of event:** Thessaloniki, Kentriki Makedonia, Greece  
**Date of event:** 28/08/2016  
**End date:** 05/09/2016  
Rafael Delgado López; Antonio Dobado González; Felipe José Llanes Estrada.
- 19** **Title of the work:** Effective Field Theories for studying a strongly interacting EWSBS at the TeV scale  
**Name of the conference:** Seminar at the MPI  
**Type of event:** Seminar  
**Corresponding author:** Yes  
**City of event:** Munich, Oberbayern, Germany



**Date of event:** 11/12/2015

**Organising entity:** Max-Planck-Institut für Physik      **Type of entity:** R&D Centre

**City organizing entity:** Munich, Oberbayern, Germany

Rafael Delgado López; Antonio Dobado González; Felipe José Llanes Estrada.

**20 Title of the work:** Resonances at the TeV: Higgs-like boson, but a strongly interacting EWSBS

**Name of the conference:** VII CPAN Days

**Type of event:** Workshop

**Type of participation:** Participatory - oral communication

**Corresponding author:** Yes

**City of event:** Segovia, Castile and León, Spain

**Date of event:** 01/12/2015

**End date:** 03/12/2015

**Organising entity:** Centro Nacional de Física de Partículas, Astropartículas y Nuclear

Rafael Delgado López; Antonio Dobado González; Felipe José Llanes Estrada.

**21 Title of the work:** Non-linear Electroweak Chiral Lagrangians at the TeV scale

**Name of the conference:** Seminar at the LMU

**Type of event:** Seminar

**Type of participation:** Participatory - oral communication

**Corresponding author:** Yes

**City of event:** Munich, Oberbayern, Germany

**Date of event:** 21/10/2015

**Organising entity:** Ludwig-Maximilians-Universität      **Type of entity:** University

**City organizing entity:** Munich, Oberbayern, Germany

Rafael Delgado López; Antonio Dobado González; Felipe José Llanes Estrada.

**22 Title of the work:** Unitarization and parameter space of the One-loop WLWL and ZLZL scattering from the Electroweak Chiral Lagrangian

**Name of the conference:** XXXV Reunión Bienal de la Real Sociedad Española de Física

**Type of event:** Conference

**Type of participation:** Participatory - oral communication

**Corresponding author:** Yes

**City of event:** Gijón, Principality of Asturias, Spain

**Date of event:** 13/07/2015

**End date:** 17/07/2015

**Organising entity:** REAL SOCIEDAD ESPAÑOLA DE FISICA

Rafael Delgado López; Antonio Dobado González; Felipe José Llanes Estrada.

**23 Title of the work:** Unitarization Procedures applied to a Strongly Interacting EWSBS

**Name of the conference:** 2015 International Summer Workshop on Reaction Theory

**Type of event:** Summer Workshop

**Geographical area:** Non EU International

**Type of participation:** Participatory - oral communication

**Corresponding author:** Yes

**City of event:** Bloomington, IN, United States of America

**Date of event:** 08/06/2015

**End date:** 19/06/2015

**Organising entity:** Indiana University

**Type of entity:** University

**City organizing entity:** Bloomington, IN, United States of America

Rafael Delgado López; Antonio Dobado González; María José Herrero Solans; Felipe José Llanes Estrada; Juan José Sanz Cillero.



- 24** **Title of the work:** How internet runs, a network of networks  
**Name of the conference:** Seminarios "Transversal Seminars"  
**Type of event:** Seminar  
**Type of participation:** Participatory - oral communication  
**Corresponding author:** Yes  
**City of event:** Madrid, Community of Madrid, Spain  
**Date of event:** 24/05/2015  
**Organising entity:** Universidad Complutense de Madrid  
**Type of entity:** University  
Rafael Delgado López.
- 25** **Title of the work:** Supercomputing simulations for Beyond Standard Model theories at the TeV scale: non-standard gravity and electroweak interactions  
**Name of the conference:** 2nd BSC International Doctoral Symposium  
**Type of event:** Workshop  
**Type of participation:** Participatory - oral communication  
**Corresponding author:** Yes  
**City of event:** Barcelona, Catalonia, Spain  
**Date of event:** 05/05/2015  
**End date:** 07/05/2015  
**Organising entity:** Centro Nacional de Supercomputación  
**Type of entity:** R&D Centre  
Rafael Delgado López; José Alberto Ruiz Cembranos; Antonio Dobado González; Felipe José Llanes Estrada.
- 26** **Title of the work:** Light Higgs-like scalar, but strong interactions. It is possible?  
**Name of the conference:** Jornadas de Doctorandos 2015  
**Type of event:** Workshop  
**Type of participation:** Participatory - oral communication  
**Corresponding author:** Yes  
**City of event:** Madrid, Community of Madrid, Spain  
**Date of event:** 23/04/2015  
**End date:** 25/04/2015  
**Organising entity:** Universidad Complutense de Madrid  
**Type of entity:** University  
Rafael Delgado López; Antonio Dobado González; María José Herrero Solans; Juan José Sanz Cillero.
- 27** **Title of the work:** A light Higgs in a Strongly Interacting Electroweak Symmetry Breaking Sector  
**Name of the conference:** Seminarios "Transversal Seminars"  
**Type of event:** Seminar  
**Type of participation:** Participatory - oral communication  
**Corresponding author:** Yes  
**City of event:** Madrid, Community of Madrid, Spain  
**Date of event:** 16/01/2015  
**Organising entity:** Universidad Complutense de Madrid  
**Type of entity:** University  
Rafael Delgado López; Antonio Dobado González; María José Herrero Solans; Juan José Sanz Cillero.





- 28** **Title of the work:** A light Higgs in a strongly interacting electroweak symmetry breaking sector  
**Name of the conference:** NExT Meeting at Sussex  
**Type of event:** Workshop  
**Type of participation:** Participatory - oral communication  
**Corresponding author:** Yes  
**City of event:** Sussex, Surrey, East and West Sussex, United Kingdom  
**Date of event:** 19/11/2014  
**Organising entity:** University of Sussex **Type of entity:** University  
**City organizing entity:** Falmer, Surrey, East and West Sussex, United Kingdom  
Rafael Delgado López; Antonio Dobado González; María José Herrero Solans; Felipe José Llanes Estrada; Juan José Sanz Cillero.
- 29** **Title of the work:** BSM, the case of a Strongly Interacting Electroweak Symmetry Breaking Sector  
**Name of the conference:** VI CPAN Days  
**Type of event:** Workshop  
**Type of participation:** Participatory - oral communication  
**City of event:** Sevilla, Andalusia, Spain  
**Date of event:** 20/10/2014  
**End date:** 22/10/2014  
**Organising entity:** EWSBS Centro Nacional de Física de Partículas, Astropartículas y Nuclear  
Rafael Delgado López; Antonio Dobado González; Felipe José Llanes Estrada.
- 30** **Title of the work:** A light Higgs in a strongly interacting electroweak symmetry breaking sector  
**Name of the conference:** Seminar at the SHEP group  
**Type of event:** Seminar  
**Type of participation:** Participatory - oral communication  
**Corresponding author:** Yes  
**City of event:** Southampton, Hampshire and Isle of Wight, United Kingdom  
**Date of event:** 16/10/2014  
**End date:** 16/10/2014  
**Organising entity:** University of Southampton **Type of entity:** University  
**City organizing entity:** Southampton, Hampshire and Isle of Wight, United Kingdom  
Rafael Delgado López; Antonio Dobado González; María Jesús Herrero Solans; Felipe José Llanes Estrada; Juan José Sanz Cillero.
- 31** **Title of the work:** BSM through a strongly interacting Electroweak Symmetry Breaking Sector  
**Name of the conference:** UK HEP Forum 2014 ("Future Colliders")  
**Type of event:** Conference  
**Type of participation:** Participatory - poster  
**Corresponding author:** Yes  
**City of event:** Abingdon, Oxford, Berkshire, Buckinghamshire and Oxfordshire, United Kingdom  
**Date of event:** 13/10/2014  
**End date:** 14/10/2014  
**Organising entity:** Science and Technology Facilities Council **Type of entity:** State agency  
**City organizing entity:** United Kingdom  
Rafael Delgado López; Antonio Dobado González; María José Herrero Solans; Felipe José Llanes Estrada; Juan José Sanz Cillero.



- 32** **Title of the work:** One-loop computations from the Electroweak Chiral Lagrangian with a light Higgs  
**Name of the conference:** XIth Quark Confinement and the Hadron Spectrum  
**Type of event:** Conference  
**Type of participation:** 'Participatory - poster  
**Corresponding author:** Yes  
**City of event:** Saint-Petersburg, Russia  
**Date of event:** 08/09/2014  
**End date:** 12/09/2014  
Rafael Delgado López; Antonio Dobado González; Felipe José Llanes Estrada.
- 33** **Title of the work:** Strongly Interacting Electroweak Symmetry Breaking Sector with a Higgs-like light scalar  
**Name of the conference:** XIth Quark Confinement and the Hadron Spectrum  
**Type of event:** Conference  
**Type of participation:** Participatory - oral communication  
**Corresponding author:** Yes  
**City of event:** Saint-Petersburg, Russia  
**Date of event:** 08/09/2014  
**End date:** 12/09/2014  
Rafael Delgado López; Antonio Dobado González; María José Herrero Solans; Felipe José Llanes Estrada; Juan José Sanz Cillero.
- 34** **Title of the work:** One-loop computations from the Electroweak Chiral Lagrangian with a light Higgs  
**Name of the conference:** 37th International Conference in High Energy Physics  
**Type of event:** Conference **Geographical area:** Non EU International  
**Type of participation:** 'Participatory - poster  
**Corresponding author:** Yes  
**City of event:** Valencia, Valencian Community, Spain  
**Date of event:** 02/07/2014  
**End date:** 09/07/2014  
Rafael Delgado López; Antonio Dobado González; Felipe José Llanes Estrada.
- 35** **Title of the work:** Graviton and Branon search at the LHC  
**Name of the conference:** V CPAN Days  
**Type of event:** Workshop  
**Type of participation:** Participatory - oral communication  
**Corresponding author:** Yes  
**City of event:** Santiago de Compostela, Galicia, Spain  
**Date of event:** 25/11/2013  
**End date:** 27/11/2013  
**Organising entity:** Centro Nacional de Física de Partículas, Astropartículas y Nuclear  
Rafael Delgado López; José Alberto Ruiz Cembranos; Antonio Dobado González.
- 36** **Title of the work:** Light Higgs, still strong interactions  
**Name of the conference:** V CPAN Days  
**Type of event:** Workshop  
**Type of participation:** Participatory - oral communication  
**Corresponding author:** Yes  
**City of event:** Santiago de Compostela, Galicia, Spain  
**Date of event:** 25/11/2013  
**End date:** 27/11/2013  
**Organising entity:** Centro Nacional de Física de Partículas, Astropartículas y Nuclear



Rafael Delgado López; Antonio Dobado González; Felipe José Llanes Estrada.

**37 Title of the work:** Monte Carlo simulations for extra dimensional models at the LHC

**Name of the conference:** Taller de Altas Energías 2013

**City of event:** Benasque, Aragon, Spain

**Date of event:** 15/09/2013

**End date:** 28/09/2013

Rafael Delgado López; José Alberto Ruiz Cembranos; Antonio Dobado González.

**38 Title of the work:** Monte Carlo simulations for extra dimensional models at the LHC

**Name of the conference:** XXXIV Reunión Bienal de la Real Sociedad Española de Física

**Type of event:** Conference

**Type of participation:** Participatory - oral communication

**Corresponding author:** Yes

**City of event:** Valencia, Valencian Community, Spain

**Date of event:** 15/07/2013

**End date:** 19/07/2013

**Organising entity:** REAL SOCIEDAD ESPAÑOLA DE FISICA

Rafael Delgado López; José Alberto Ruiz Cembranos; Antonio Dobado González.

**39 Title of the work:** Multistep condensation

**Name of the conference:** V Encuentro Gases cuánticos en Madrid

**Type of event:** Conference

**Type of participation:** Participatory - oral communication

**Corresponding author:** Yes

**City of event:** Madrid, Community of Madrid, Spain

**Date of event:** 14/01/2013

**Organising entity:** Centro de Física Miguel Antonio **Type of entity:** State agency  
Catalán

Rafael Delgado López; Pedro Bargeño de Retes; Fernando Sols Lucia.

**40 Title of the work:** Multistep condensation

**Name of the conference:** V Jornadas de Jóvenes Investigadores en Física Atómica y Molecular

**Type of event:** Workshop

**Type of participation:** Participatory - oral communication

**Corresponding author:** Yes

**Date of event:** 14/01/2013

**Organising entity:** Universidad Complutense de Madrid **Type of entity:** University

Rafael Delgado López; Pedro Bargeño de Retes; Fernando Sols Lucia.

## Other dissemination activities

**1 Title of the work:** Lo que mueve el sol y las estrellas

**Type of event:** conference and observation

**City of event:** Ávila, Castile and León, Spain

**Date of event:** 07/05/2022

**Organising entity:** Fundación Tatiana Pérez de Guzmán el Bueno **Type of entity:** Foundation

**City organizing entity:** Madrid, Spain



- 2** **Title of the work:** Astronomía y Astrofísica  
**Type of event:** Conferences given  
**City of event:** Sigüenza, Castile-La Mancha, Spain  
**Date of event:** 07/09/2019  
**Organising entity:** Centro de Información Juvenil "La Salamandra", Ayto. Sigüenza
- 3** **Title of the work:** Collaboration: planetarium software (Stellarium and Celestia), astronomical observation / Colaboración: software de planetario virtual (Stellarium y Celestia), observación astronómica  
**Name of the event:** Jornada literaria en Sigüenza: 'Mitos y Estrellas' / Literary day in Sigüenza: 'Myths and Stars'  
**Type of event:** Conferences given  
**Reasons for participation:** Upon invitation  
**City of event:** Sigüenza, Castile-La Mancha, Spain  
**Date of event:** 26/08/2017  
**Organising entity:** Club de Lectura Ciervo Blanco      **Type of entity:** Associations and Groups  
Rafael Delgado López. Available on-line at: <<http://ciervoblanco.club/mitos-y-estrellas/>>.
- 4** **Title of the work:** Public Astronomical Observation in Sigüenza / Observación Astronómica en Sigüenza  
**Type of event:** Public Astronomical Observation with Telescope / 46/5000 Observación Pública con Telescopio  
**City of event:** Sigüenza, Castile-La Mancha, Spain  
**Date of event:** 21/08/2017  
**Organising entity:** Excmo. Ayuntamiento de Sigüenza      **Type of entity:** Ayuntamiento
- 5** **Title of the work:** Jornada de Astronomía / Astronomy Day  
**Type of event:** Lecture + Public Observation / Conferencia impartida + Observación Pública  
**City of event:** Atienza, Castile-La Mancha, Spain  
**Date of event:** 10/08/2013  
**Organising entity:** Sibilas de Atienza      **Type of entity:** Associations and Groups  
Rafael Delgado López. Available on-line at:  
<<http://sibilasdeatienza.blogspot.de/2013/12/cronica-del-2013.html>>.

## R&D management and participation in scientific committees

### Organization of R&D activities

**Title of the activity:** VBSCan Mid-Term Scientific Meeting  
**Type of activity:** Scientific Meeting  
**Convening entity:** Piri Reis University  
**City convening entity:** Istanbul, Turkey  
**Type of participation:** Editor of the Report  
**Start-End date:** 02/07/2019 - 04/07/2019      **Duration:** 2 days



## R&D management

- 1** **Name of the activity:** Administrator of the high performance computing system ADAI / Administrador del sistema de cálculo de alto rendimiento ADAI  
**Performed tasks:** Administration of the ADAI computer (1TB RAM and NVIDIA A5000 GPU) and management of the queue system  
**Entity:** Universidad Politécnica de Madrid **Type of entity:** University  
**Start date:** 01/02/2023
- 2** **Name of the activity:** Departamental Web Manager / Administrador de Páginas Webs  
**Type of management:** Web Administrator  
**Performed tasks:** Creation and maintenance of the local departamental webpage / Creación y mantenimiento de la página web departamental  
**Entity:** INFN **Type of entity:** Public Research Body  
**Start date:** 01/10/2019
- 3** **Name of the activity:** Departamental Web manager / Administrador de web departamental  
**Type of management:** Web Administrator  
**Performed tasks:** Maintain the T30f research group webpage, including seminar, congresses and group members / Mantenimiento de la página web del grupo T30f en la TUM.  
**Entity:** T30f group, TUM **Type of entity:** University  
**Start date:** 01/10/2017
- 4** **Name of the activity:** Departamental Web manager / Administrador de web departamental  
**Type of management:** Web Administrator  
**Performed tasks:** Maintain the webpage of the Effective Theories in Modern Physics Group at UCM / Administrador de la página web del Grupo de Teorías Efectivas en Física Moderna de la UCM  
**Entity:** Universidad Complutense de Madrid **Type of entity:** University  
**Start date:** 01/12/2012 **Duration:** 4 years
- 5** **Name of the activity:** IT manager of a scientific-divulgence society / Administrador de Sistemas en sociedad de divulgación científica  
**Type of management:** IT manager / Administrador de Sistemas  
**Performed tasks:** Web Manager, disclosure and advertisement of scientific-divulgence events, server manager, network manager / Administrador de páginas webs, divulgación y publicidad de eventos de divulgación científica, administrador de servidores informáticos, administrador de redes  
**Entity:** ASAAF **Type of entity:** University scientific-divulgence society / Sociedad universitaria de divulgación científica  
**Start date:** 01/02/2012 **Duration:** 2 years - 7 months - 29 days



## Other achievements

### Stays in public or private R&D centres

- 1** **Entity:** SLAC-National Accelerator Laboratory **Type of entity:** R&D Centre  
**City of entity:** Menlo Park, California, United States of America  
**Start-End date:** 01/11/2016 - 30/11/2016 **Duration:** 1 month  
**Goals of the stay:** Guest  
**Provable tasks:** Collaboration Prof. S.Brodsky
- 2** **Entity:** Max Planck Society **Type of entity:** State agency  
**Faculty, institute or centre:** Max Planck Institut für Physik in München  
**City of entity:** Munich, Oberbayern, Germany  
**Start-End date:** 15/09/2015 - 15/12/2015 **Duration:** 3 months  
**Goals of the stay:** Guest  
**Provable tasks:** Collaboration Prof. Thomas Hahn
- 3** **Entity:** University of Southampton **Type of entity:** University  
**Faculty, institute or centre:** Schools of Physics and Astronomy  
**City of entity:** Southampton, Hampshire and Isle of Wight, United Kingdom  
**Start-End date:** 26/06/2015 - 02/07/2015 **Duration:** 8 days  
**Goals of the stay:** Guest  
**Provable tasks:** Collaboration Prof. Stefano Moretti
- 4** **Entity:** University of Southampton **Type of entity:** University  
**Faculty, institute or centre:** School of Physics and Astronomy  
**City of entity:** Southampton, Hampshire and Isle of Wight, United Kingdom  
**Start-End date:** 15/09/2014 - 15/12/2014 **Duration:** 3 months  
**Goals of the stay:** Guest  
**Provable tasks:** Collaboration Prof. Stefano Moretti

### Obtained grants and scholarships

- 1** **Name of the grant:** INFN post-doctoral fellowship (2 years, ended early because of position in UPM, Madrid, Spain)  
**Aims:** Post-doctoral  
**Awarding entity:** Istituto Nazionale di Fisica Nucleare (INFN)  
**Conferral date:** 08/02/2019 **Duration:** 9 months  
**End date:** 31/08/2020  
**Entity where activity was carried out:** INFN
- 2** **Name of the grant:** Ramon Areces Foundation Fellowship  
**Aims:** Post-doctoral  
**Awarding entity:** Fundación Ramón Areces **Type of entity:** Foundation  
**Conferral date:** 29/06/2017 **Duration:** 2 years  
**End date:** 30/09/2019  
**Entity where activity was carried out:** TUM - Technische Universität München



- 3** **Name of the grant:** PhD Grant, Spanish FPI programm / Beca FPI de Formación de Personal Investigador  
**Aims:** Pre-doctoral  
**Awarding entity:** Ministerio de Economía y Competitividad **Type of entity:** MINECO  
**Conferral date:** 28/11/2012 **Duration:** 4 years  
**End date:** 01/12/2016  
**Entity where activity was carried out:** Universidad Complutense de Madrid  
**Faculty, institute or centre:** Facultad de Ciencias Físicas
- 4** **Name of the grant:** 5 "Excellence Grants" funded by the Community of Madrid / Beca de Excelencia de la CAM: obtenida los 5 años de Licenciatura  
**City awarding entity:** Madrid, Community of Madrid, Spain  
**Aims:** Pre-doctoral  
**Awarding entity:** Comunidad de Madrid **Type of entity:** Consejería de Educación  
**Amount of the grant:** 22.500 €  
**Conferral date:** 01/06/2007 **Duration:** 5 years  
**End date:** 01/06/2012  
**Entity where activity was carried out:** Universidad Complutense de Madrid  
**Faculty, institute or centre:** Facultad de Ciencias Físicas
- 5** **Name of the grant:** Summer research grant / Beca JAE-Intro de Introducción a la Investigación  
**Aims:** Pre-doctoral  
**Awarding entity:** Consejo Superior de Investigaciones Científicas **Type of entity:** State agency  
**Conferral date:** 22/03/2011 **Duration:** 2 months  
**End date:** 30/09/2011  
**Entity where activity was carried out:** Consejo Superior de Investigaciones Científicas  
**Faculty, institute or centre:** Instituto de Física Teórica
- 6** **Name of the grant:** [RESIGNED / RENUNCIADA]: IAC Summer Research Grants 2011  
**Aims:** Pre-doctoral  
**Awarding entity:** Instituto de Astrofísica de Canarias **Type of entity:** Public Research Body  
**Conferral date:** 01/03/2011 **Duration:** 2 months  
**Entity where activity was carried out:** Instituto de Astrofísica de Canarias

### Scientific societies and professional associations

**Name of the society:** Royal Spanish Society of Physics. Agreement with the APS and the EPS / Real Sociedad Española de Física. Convenio con la APS y la EPS.  
**City:** Spain  
**Start date:** 28/10/2011



## Co-operation networks

- 1** **Name of the network:** Vector Boson Scattering Coordination and Action Network  
**Identification of the network:** COST Action CA16108  
**Start date:** 30/08/2017
- 2** **Name of the network:** LHC Higgs cross-section working group (LHCHXSWG)  
**Identification of the network:** hep-ph, hep-ex, hep-th, meeting point between experimentalists and theorists at CERN  
**City of co-operation network:** Ginebra, Switzerland  
**Participating entity/entities:** CERN **Type of entity:** R&D Centre  
**Start date:** 08/07/2016

## Prizes, mentions and distinctions

- 1** **Description:** Extraordinary PhD Award / Premio Extraordinario de Doctorado  
**Awarding entity:** Universidad Complutense de Madrid **Type of entity:** University  
**City awarding entity:** Madrid, Community of Madrid, Spain  
**Conferral date:** 05/07/2017
- 2** **Description:** Springer Theses Award  
**Awarding entity:** Springer-Verlag Ibérica, S.A. **Type of entity:** Business  
**Conferral date:** 07/03/2017
- 3** **Description:** "2014 Highlights" and journal cover  
**Awarding entity:** Journal of Physics G: Nuclear and Particle Physics **Type of entity:** Scientific journal  
**Conferral date:** 04/03/2015
- 4** **Description:** Extraordinary Degree Award / Premio Extraordinario de Licenciatura  
**Awarding entity:** Universidad Complutense de Madrid **Type of entity:** University  
**City awarding entity:** Madrid, Community of Madrid, Spain  
**Conferral date:** 06/06/2013
- 5** **Description:** Extraordinary Secondary Education Award / Premio Extraordinario de Bachillerato  
**Awarding entity:** Junta de Comunidades de Castilla - La Mancha **Type of entity:** Consejería de Educación y Ciencia  
**Conferral date:** 25/01/2008





## Obtained accreditations/recognitions

- 1** **Description:** Certificación R3 SOLICITADA / (R3 certification REQUESTED)  
**Accrediting entity:** Ministerio de Ciencia e Innovación **Type of entity:** Agencia Estatal de Investigación  
**Date of recognition:** 01/04/2023
- 2** **Description:** Habilitation for the position of Ternured Professor in Private University in Spain / Acreditación para Profesor de Universidad Privada  
**Accrediting entity:** Agencia Nacional de Evaluación de la Calidad y Acreditación **Type of entity:** State agency  
**City accrediting entity:** Spain  
**Date of recognition:** 18/07/2018
- 3** **Description:** Habilitation for the position of Ternured Professor in Spain / Acreditación para Profesor Contratado Doctor  
**Accrediting entity:** Agencia Nacional de Evaluación de la Calidad y Acreditación **Type of entity:** State agency  
**City accrediting entity:** Spain  
**Date of recognition:** 18/07/2018
- 4** **Description:** Habilitation for the position of Assistant Professor in Spain / Acreditación para Profesor Ayudante Doctor  
**Accrediting entity:** Agencia Nacional de Evaluación de la Calidad y Acreditación **Type of entity:** State agency  
**City accrediting entity:** Spain  
**Date of recognition:** 14/12/2016