









Personal data and professional situation

Name: Alejandro

Surname: Jiménez Cano

Nationality: Spain

PROFESSIONAL PROFILES AND IDENTIFIERS

	Inspire-HEP	A.Jimenez.Cano.1		Research Gate
	ORCID	0000-0002-1037-1142		Google Scholar
	Scopus	57193578466		LinkedIn
	WoS ResearcherID	AAZ-4179-2021		arXiv

CURRENT PROFESSIONAL SITUATION AND CONTACT

Professional category	Mobilitas postdoctoral contract
Institution	University of Tartu
Faculty/Center	Institute of Physics
Department	Laboratory of Theoretical Physics
Mailing address	W. Ostwaldi 1 (Physicum), 50411 Tartu, Estonia
e-mail	alejandro.jimenez.cano@ut.ee
Web	https://kodu.ut.ee/~alejandj/

AREAS OF RESEARCH AND INTERESTS

- ☐ **Specialization.** Metric-Affine theories of gravity and other extensions of General Relativity, and viability and stability analysis of models within these theories.
- ☐ **Other interests.** I am especially interested in Mathematical Physics and other side topics related to gravitation, such as
 - advanced topics in geometry;
 - field theory in curved spaces and semi-classical gravity;
 - Hamiltonian geometry and structures, degrees of freedom and instabilities in field theory;
 - compact objects and gravitational waves.

Professional career

ANECA CERTIFICATIONS

Programa de evaluación del profesorado contratado (PEP):

<input type="checkbox"/> Profesor ayudante doctor	Positive resolution: 22 June 2022.
<input type="checkbox"/> Profesor de universidad privada	Positive resolution: 22 June 2022.
<input type="checkbox"/> Profesor contratado doctor	Positive resolution: 22 June 2022.

RESEARCH GRANTS AND CONTRACTS

10.2021–09.2023	Mobilitas postdoctoral contract	[Ref MOBJD1035]
	Program	Mobilitas Pluss Postdoctoral Program 2021
	Funding entity	European Regional Development Fund
	Project title	<i>Metric-affine gravity. Viability, cosmological implications and symmetry breaking</i>
	Advisor	Manuel Hohmann and Tomi S. Koivisto (Lab. of theoretical physics, U. Tartu)
	Center	Institute of Physics (Univ. Tartu), Tartu (Estonia)

05.2017– 07.09.2021	FPU predoctoral contract	[Ref FPU15/02864]
	Program Formación de Profesorado Universitario 2015 Funding entity Spanish Ministry of Education, Culture and Sport Project title <i>Metric-Affine Gauge theories of gravity. Foundations and new insights</i> Advisor Bert Janssen (Dpto. de física teórica y del cosmos, Universidad de Granada) Center Universidad de Granada. Granada (Spain)	
09.2019–11.2019	Doctoral stay in Tartu	
	Program Estancias breves en centros de investigación nacionales y extranjeros Funding entity Universidad de Granada (Plan Propio) Project title <i>Ondas gravitacionales en gravedad métrico-afín</i> Advisor Manuel Hohmann (Laboratory of theoretical physics, Univ. Tartu) Center Institute of Physics (Univ. Tartu), Tartu (Estonia)	
2015–2016	Investigador becario	
	Program Beca de colaboración Funding entity Spanish Ministry of Education, Culture and Sport Project title <i>Formalismo de Palatini en frames conformes</i> Advisor Bert Janssen (Dpto. de física teórica y del cosmos, Universidad de Granada) Center Universidad de Granada. Granada (Spain)	
2014–2015	Investigador becario	
	Program Becas de Iniciación a la investigación Funding entity Universidad de Granada (Plan Propio) Project title <i>Diagramas de Penrose de algunas soluciones cosmológicas</i> Advisor Bert Janssen (Dpto. de física teórica y del cosmos, Universidad de Granada) Center Universidad de Granada. Granada (Spain)	

Education

EDUCATION

2016-2021	PhD in Physics and Mathematics	
	Title of the thesis Metric-Affine Gauge Theories of Gravity. Foundations and new insights Director Bert Janssen Center Universidad de Granada. Granada (Spain) Date of defense 07 September 2021 Grade Sobresaliente (Cum Laude) Mentions International PhD	
2015-2016	Master in Physics and Mathematics	
	Grade 9.51 / 10 Center Universidad de Granada y Universidad de Castilla-La Mancha (Spain)	
2011-2015	Grado en Física (Bachelor of Science - Physics)	
	Grade 9.638 / 10 Center Universidad de Granada. Granada (Spain)	
2009-2011	Bachillerato - Modalidad de Tecnología	
	Grade 13.525 / 14 (incluye P.A.U.) Center Colegio San Agustín. Ceuta (Spain)	

ADVANCED PHYSICS SCHOOLS

❑ **North American Einstein Toolkit School 2021**

[Online] University of Illinois Urbana Champaign. Urbana-Champaign (USA). 26 – 30 July 2021.

❑ **IPARCOS School on Gravitational Waves**

Universidad Complutense de Madrid. Madrid (Spain). 18 – 20 December 2019.

COURSES AND COMPLEMENTARY TRAINING

❑ **III Curso de Historia de la Física: Construyendo un futuro (20 h)**

Granada (Spain), throughout 2017-2018. Grade: 9. Organized by the seminar "La física y sus historias" (UGR).

❑ **Curso Información y Caos (30 h)**

Granada (Spain), March 16, 17 and April 6, 7, 13, 14, 20, 21 (2018). Organized by Centro Mediterráneo and Universidad de Granada.

❑ **Writing a research paper in English: strategies and techniques (9 h)**

Granada (Spain), January 17, 24, 26 (2018). Organized by Escuela de Doctorado (UGR).

❑ **Curso Energía y materia (10 h)**

Granada (Spain), October 5, 6 and November 2, 9, 10 (2017). Organized by Escuela de Doctorado (UGR).

❑ **Scientific Research, Publishing and Ethics (30 h)**

Granada (Spain), September 25 - 28 (2017). Organized by Escuela de Doctorado (UGR).

❑ **Curso Energía y materia (30 h)**

Granada (Spain), June 26-29 (2017). Organized by Centro Mediterráneo and Universidad de Granada.

❑ **II Curso de Historia de la Física: Construyendo un futuro (20 h)**

Granada (Spain), throughout 2016-2017. Grade: 9. Organized by the seminar "La física y sus historias" (UGR).

COURSES AND SEMINAR ON TEACHING TRAINING, IMPROVEMENT AND INNOVATION

❑ **Novice lecturer taking part in the program: Actuación de un equipo docente en formación inicial de profesorado en áreas experimentales y técnicas (38 h)**

Granada (Spain), November 2018 – June 2019 (UGR).

Research activity

PARAMETERS [INSPIRE-HEP]

	In total	Published only
Citations	322	311
<i>h</i> -index	8	8

PUBLICATIONS

Author signature: Alejandro Jiménez-Cano

— Research articles

1. **Bootstrapping gravity and its extension to metric-affine theories**

Adrià Delhom, Gerardo García-Moreno, Manuel Hohmann, **A. Jiménez-Cano**, Tomi S. Koivisto.

Sent to JCAP - Under revision

arXiv: [2211.13056](https://arxiv.org/abs/2211.13056) [gr-qc]

2. On parity-odd sector in metric-affine theories

J. Beltrán Jiménez, **A. Jiménez-Cano**, Y. N. Obukhov.

The European Physical Journal C **83**, 115 (2023).

DOI: [10.1140/epjc/s10052-023-11250-2](https://doi.org/10.1140/epjc/s10052-023-11250-2)

arXiv: [2210.01729](https://arxiv.org/abs/2210.01729) [gr-qc]

Accepted: 22 January 2023

3. Vector stability in quadratic metric-affine theories

A. Jiménez-Cano, F. J. Maldonado Torralba.

Journal of Cosmology and Astroparticle Physics **09**, 044 (2022).

DOI: [10.1088/1475-7516/2022/09/044](https://doi.org/10.1088/1475-7516/2022/09/044)

arXiv: [2205.05674](https://arxiv.org/abs/2205.05674) [gr-qc]

Accepted: 28 July 2022

4. Review of Gravitational Wave Solutions in Quadratic Metric-Affine Gravity

A. Jiménez-Cano.

International Journal of Geometric Methods in Modern Physics **19**, 2240004 (2022).

DOI: [10.1142/S0219887822400047](https://doi.org/10.1142/S0219887822400047)

arXiv: [2203.03936](https://arxiv.org/abs/2203.03936) [gr-qc]

Accepted: 09 March 2022

5. Gravitational waves in metric-affine gravity theory

A. Jiménez-Cano, Y. N. Obukhov.

Physical Review D **103**, 024018 (2021).

DOI: [10.1103/PhysRevD.103.024018](https://doi.org/10.1103/PhysRevD.103.024018)

arXiv: [2010.14528](https://arxiv.org/abs/2010.14528) [gr-qc]

Accepted: 16 December 2020

6. On the strong coupling of Einsteinian Cubic Gravity and its generalisations

J. Beltrán Jiménez, **A. Jiménez-Cano**.

Journal of Cosmology and Astroparticle Physics **01**, 069 (2021).

DOI: [10.1088/1475-7516/2021/01/069](https://doi.org/10.1088/1475-7516/2021/01/069)

arXiv: [2009.08197](https://arxiv.org/abs/2009.08197) [gr-qc]

Accepted: 24 November 2020

7. Inconsistencies in four-dimensional Einstein-Gauss-Bonnet gravity

J. Arrechea, A. Delhom, **A. Jiménez-Cano**.

Chinese Physics C **45**, 013107 (2021).

DOI: [10.1088/1674-1137/abc1d4](https://doi.org/10.1088/1674-1137/abc1d4)

arXiv: [2004.12998](https://arxiv.org/abs/2004.12998) [gr-qc]

Accepted: 07 September 2020

8. Comment on “Einstein-Gauss-Bonnet Gravity in four-dimensional space-time”

J. Arrechea, A. Delhom, **A. Jiménez-Cano**.

Physical Review Letters **125**, 149002 (2020).

DOI: [10.1103/PhysRevLett.125.149002](https://doi.org/10.1103/PhysRevLett.125.149002)

arXiv: [2009.10715](https://arxiv.org/abs/2009.10715) [gr-qc]

Accepted: 10 September 2020

9. New metric-affine generalizations of gravitational wave geometries

A. Jiménez-Cano.

The European Physical Journal C **80**, 672 (2020).

DOI: [10.1140/epjc/s10052-020-8239-5](https://doi.org/10.1140/epjc/s10052-020-8239-5)

arXiv: [2005.02014](https://arxiv.org/abs/2005.02014) [gr-qc]

Accepted: 11 July 2020

10. General Teleparallel Quadratic Gravity

J. Beltrán Jiménez, L. Heisenberg, D. Iosifidis, **A. Jiménez-Cano**, T. S. Koivisto.

Physics Letters B **805**, 135422 (2020).

DOI: [10.1016/j.physletb.2020.135422](https://doi.org/10.1016/j.physletb.2020.135422)

arXiv: [1909.09045](https://arxiv.org/abs/1909.09045) [gr-qc]

Accepted: 08 April 2020

11. Geometric inequivalence of metric and Palatini formulations of General Relativity

C. Bejarano, A. Delhom, **A. Jiménez-Cano**, G. J. Olmo, D. Rubiera-Garcia.

Physics Letters B **802**, 135275 (2020).

DOI: [10.1016/j.physletb.2020.135275](https://doi.org/10.1016/j.physletb.2020.135275) arXiv: [1907.04137](https://arxiv.org/abs/1907.04137) [gr-qc]
 Accepted: 31 January 2020

12. On the topological character of metric-affine Lovelock Lagrangians in critical dimensions

B. Janssen, A. Jiménez-Cano.

Physics Letters B **798**, 134996 (2019).

DOI: [10.1016/j.physletb.2019.134996](https://doi.org/10.1016/j.physletb.2019.134996) arXiv: [1907.12100](https://arxiv.org/abs/1907.12100) [gr-qc]

Accepted: 30 September 2019

13. A non-trivial connection for the metric-affine Gauss-Bonnet theory in $D = 4$

B. Janssen, A. Jiménez-Cano, J. A. Orejuela.

Physics Letters B **795**, 42–48 (2019).

DOI: [10.1016/j.physletb.2019.06.002](https://doi.org/10.1016/j.physletb.2019.06.002) arXiv: [1903.00280](https://arxiv.org/abs/1903.00280) [gr-qc]

Accepted: 02 June 2019

14. Projective symmetries and induced electromagnetism in metric-affine gravity

B. Janssen, A. Jiménez-Cano.

Physics Letters B **786**, 462–465 (2018).

DOI: [10.1016/j.physletb.2018.10.032](https://doi.org/10.1016/j.physletb.2018.10.032) arXiv: [1807.10168](https://arxiv.org/abs/1807.10168) [gr-qc]

Accepted: 17 October 2018

15. On the (non-)uniqueness of the Levi-Civita connection in the Einstein-Hilbert-Palatini formalism

A. N. Bernal, B. Janssen, A. Jiménez-Cano, J. A. Orejuela, M. Sánchez, P. Sánchez-Moreno.

Physics Letters B **768**, 280–287 (2017).

DOI: [10.1016/j.physletb.2017.03.001](https://doi.org/10.1016/j.physletb.2017.03.001) arXiv: [1606.08756](https://arxiv.org/abs/1606.08756) [gr-qc]

Accepted: 02 March 2017

— Published school proceedings and lecture notes

1. Instabilities in field theories: Lecture notes with a view into modified gravity

Adrià Delhom, A. Jiménez-Cano, F. J. Maldonado Torralba.

To be published

Description: Lectures prepared for the course “Selected Topics in the Theories of Gravity”, given at the Institute of Physics (University of Tartu, Estonia) in spring 2022. Recordings: <https://button.ut.ee/b/lau-a4e-8eb-es1>

DOI: -- arXiv: [2207.13431](https://arxiv.org/abs/2207.13431) [gr-qc]

2. Quantum field theory and the structure of the Standard Model

J. I. Illana, A. Jiménez-Cano.

PoS(CORFU2021) **406**, 314 (2022).

Description: Proceedings of Corfu Summer Institute 2021 “School and Workshops on Elementary Particle Physics and Gravity”

DOI: [10.22323/1.406.0314](https://doi.org/10.22323/1.406.0314) arXiv: [2211.14636](https://arxiv.org/abs/2211.14636) [hep-ph]

Published: 23 November 2022

— Books chapters

1. (Non-)uniqueness of Einstein-Palatini Gravity

B. Janssen, A. Jiménez-Cano, J. A. Orejuela, P. Sánchez-Moreno.

Book: *Fundamental Physics and Physics Education Research*, p. 49-59, Springer (2020).

Editors: B. G. Sidharth, J. Carnicer, M. Micheleni, C. Perea.

DOI: [10.1007/978-3-030-52923-9](https://doi.org/10.1007/978-3-030-52923-9) arXiv: [1901.02326](https://arxiv.org/abs/1901.02326) [gr-qc]

❑ **COST Action – Addressing observational tensions in cosmology with systematics and fundamental physics (CosmoVerse)** (CA21136)

Funding entity: European Union
 Period: 21 October 2022 – 20 October 2026
 Amount: -----
 Principal investigator (PI): Jackson Levi Said (University of Malta)
 Type of participation: Researcher of the group WG3: Fundamental Physics
 N° participant researchers: -----

❑ **Mobilitas Pluss Project** (MOBJD1035)

Funding entity: European Regional Development Fund
 Period: 01 November 2021 – 31 October 2023
 Amount: 107 500 EUR
 Principal investigator (PI): Alejandro Jiménez Cano (University of Tartu)
 Type of participation: PI
 N° participant researchers: 1

❑ **Tume Universum / The Dark Side of the Universe** (TK133)

Funding entity: Archimedes Foundation (Estonia)
 Period: 01 March 2016 – 01 March 2023
 Amount: 778 050 EUR
 Principal investigator (PI): Manuel Hohmann (University of Tartu)
 Type of participation: Senior researcher
 N° participant researchers: 25

❑ **COST Action – Quantum Gravity Phenomenology in the Multi-messenger Approach** (CA18108)

Funding entity: European Union
 Period: 14 March 2019 – 14 March 2023
 Amount: -----
 Principal investigator (PI): José Manuel Carmona (Universidad de Zaragoza)
 Type of participation: Researcher of the group WG1: Theoretical frameworks for gravity effects below the Planck energy; WG2: Phenomenology of quantum gravity; WG6: Gravitational waves
 N° participant researchers: -----

❑ **Teorías efectivas de gravedad y cosmología** (PID2019-105943GB-I00)

Funding entity: Ministerio de Ciencia, Innovación y Universidades
 Period: 01 June 2020 – 31 May 2023
 Amount: 38 720 EUR
 Principal investigator (PI): Mar Bastero Gil (Universidad de Granada)
 Type of participation: Collaborator
 N° participant researchers: 6

❑ **Teorías efectivas de cosmología y gravedad** (FIS2016-78198-P)

Funding entity: Ministerio de Economía y Competitividad
 Period: 30 December 2016 – 29 December 2019
 Amount: 39 325 EUR
 Principal investigator (PI): Mar Bastero Gil (Universidad de Granada)
 Type of participation: Collaborator
 N° participant researchers: 5

Seminars and contributions at workshops

CONTRIBUTIONS

— *Contributions and talks at national (Spain) and international workshops*

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 1. Bootstrapping General Relativity and beyond
VI FTAE Christmas Workshop
Ed. Mecenás (Univ. Granada), Granada (Spain). 20 – 21 December 2022 | Invited talk |
| 2. Bootstrapping gravity: extension to the metric-affine framework
Madrid Winter Workshop in Theoretical Physics
Facultad de Ciencias Físicas (Univ. Complutense de Madrid), Madrid (Spain). 12 – 15 December 2022 | Talk |
| 3. Restrictions in quadratic metric-affine gravity from the stability of the vector sector
Spanish and Portuguese Relativity Meetings 2022 (EREP2022)
Auditorio Fonseca (Univ. Salamanca), Salamanca (Spain). 29 August 2022 – 02 September 2022 | Talk |
| 4. Restrictions in quadratic metric-affine gravity from the stability of the vector sector
Metric-Affine Frameworks for Gravity 2022 (MaffGrav2022)
Institute of Physics (Univ. Tartu), Tartu (Estonia). 27 June 2022 – 01 July 2022 | Talk |
| 5. On the strong coupling of Einsteinian Cubic Gravity and its generalisations
V Winter Workshop on Theoretical Physics
[Online] Facultad de Física (Univ. Valencia), Valencia (Spain). 13 – 15 December 2021 | Talk |
| 6. Gravitational wave solutions in quadratic metric-affine gravity
Geometric Foundations of Gravity 2021
[Online] Institute of Physics (Univ. Tartu), Tartu (Estonia). 28 June 2021 – 02 July 2021 | Talk |
| 7. Inconsistencies in four-dimensional Einstein-Gauss-Bonnet gravity
IV Winter Workshop on Theoretical Physics
[Online] Facultad de Física (Univ. Valencia), Valencia (Spain). 14 – 18 December 2020 | Talk |
| 8. On the solutions of the Einstein-Hilbert and Gauss-Bonnet metric-affine Lagrangians
22nd International Conference on General Relativity and Gravitation (GR22)
Valencia Conference Centre (Univ. Valencia), Valencia (Spain). 07 – 12 July 2019 | Poster |
| 9. Ondas gravitacionales en gravedad métrico-afín
IV Jornadas/II Congreso Nacional Investigadores en Formación Fomentando la Interdisciplinariedad (JIFFI)
Espacio V Centenario (Univ. Granada), Granada (Spain). 26 – 28 June 2019 | Talk |
| 10. Non-trivial solutions of the Einstein-Hilbert and Gauss-Bonnet metric-affine Lagrangians
Geometric Foundations of Gravity 2019
Institute of Physics (Univ. Tartu), Tartu (Estonia). 17 – 21 June 2019 | Talk |
| 11. Electromagnetism induced by projective symmetry in metric-affine gravity
II Winter Workshop on Theoretical Physics
Facultad de Física (Univ. Valencia), Valencia (Spain). 11 – 14 December 2018 | Talk |
| 12. Electromagnetism induced by projective symmetry in metric-affine gravity
Teleparallel Universes in Salamanca
Facultad Ciencias Matemáticas (Univ. Salamanca), Salamanca (Spain). 26 – 28 November 2018 | Talk |
| 13. La conexión afín y su papel en teorías modificadas de gravedad
III Jornadas/I Congreso Nacional Investigadores en Formación Fomentando la Interdisciplinariedad (JIFFI)
Espacio V Centenario (Univ. Granada), Granada (Spain). 20 – 22 June 2018 | Talk |
| 14. Palatini-Metric equivalence in EH gravity and beyond
I Winter Workshop on Theoretical Physics
Facultad de Física (Univ. Valencia), Valencia (Spain). 11 – 14 December 2017 | Talk |
| 15. Palatini connections in EH-Palatini gravity and extensions
VI Postgraduate meeting on Theoretical Physics
Facultad de Física (Univ. Valencia), Valencia (Spain). 29 November 2017 – 1 December 2017 | Talk |

16. (Non-)Uniqueness of Einstein-Palatini gravity

Talk

Frontiers of Fundamental Physics 15

Campus Salelas (Univ. Miguel Hernández), Orihuela (Spain). 27 – 28 November 2017

— Seminars

1. Stability of vectors and its implications in quadratic metric-affine gravity

University of Granada, Granada (Spain). 12 May 2022

2. Modified gravity theories. Metric-Affine framework and instabilities

[Online] University of Tübingen, Tübingen (Germany). 17 December 2021

3. Gravitational wave solutions in metric-affine gravity

[Online] Institute of Physics (Univ. Tartu), Tartu (Estonia). 09 February 2021

4. Gravitational wave solutions in metric-affine gravity

[Online] ZARM (Univ. Bremen), Bremen (Germany). 18 January 2021

5. About the paper: New metric-affine generalizations of gravitational wave geometries

[Online] Institute of Physics (Univ. Tartu), Tartu (Estonia). 12 May 2020

6. Are critical Lovelock Lagrangians topological in the metric-affine formulation?

Institute of Physics (Univ. Tartu), Tartu (Estonia). 10 September 2019

OTHER WORKSHOPS' ATTENDANCE (WITHOUT CONTRIBUTION)

1. Teleparallel Gravity Workshop 2020 [Online workshop]

Institute of Physics (Univ. Tartu), Tartu (Estonia). 15 – 19 June 2020 (Organized by: Laboratory of Theoretical Physics)

2. Spring Workshop on gravity and cosmology [Online workshop]

Jagiellonian University. Kraków (Poland). 25 – 29 May 2020

3. COST – Quantum Gravity Phenomenology in the Multimessenger Approach

Ed. Mecenaz (Univ. Granada), Granada (Spain). 10 – 13 March 2020 (Organized by: CA18108)

4. 3rd CAFPE–Física Teórica Christmas Workshop

Ed. Mecenaz (Univ. Granada), Granada (Spain). 20 – 21 December 2018 (Organized by: Dpto. Física Teórica y del Cosmos and CAFPE)

5. Spanish-Portuguese Relativity Meeting (EREP) 2018

Public Library, Palencia (Spain). 4 – 7 September 2018 (Organized by: SEGRE and SPRG)

6. Iberian Strings 2018

Ed. Mecenaz (Univ. Granada), Granada (Spain). 24 – 26 January 2018 (Organized by: Dept. de Física Teórica y del Cosmos and Dept. de Matemática Aplicada)

7. Iberian Strings 2016

Instituto de Física Teórica (IFT), Madrid (Spain). 27 – 29 January 2016 (Organized by: IFT, CSIC)

WORKSHOPS ORGANIZATION

❑ Member of the local organising committee of *Metric-Affine Frameworks for Gravity 2022*

Institute of Physics (Univ. Tartu), Tartu (Estonia). 27 June 2022 – 01 July 2022

❑ Member of the local organising committee of *Iberian Strings 2018*

Ed. Mecenaz (Univ. Granada), Granada (Spain). 24 – 26 January 2018

Teaching experience

UNIVERSITY COURSES

— *Bachelor courses*

Total number of hours: 140 h

2018-2019	Física (Laboratory) Bachelor's degree in Civil Engineering (1st year). Universidad de Granada (Granada, Spain)	Credits: 4,5
2019-2020	Física de los procesos biológicos (Laboratory) Bachelor's degree in Biology (1st year). Universidad de Granada (Granada, Spain)	Credits: 4
	Física II (Problems) Bachelor's degree in Chemistry (1st year). Universidad de Granada (Granada, Spain)	Credits: 1
2020-2021	Física (Laboratory) Bachelor's degree in Civil Engineering (1st year). Universidad de Granada (Granada, Spain)	Credits: 3
	Quantum Mechanics (Problems) — Given in English Bachelor's degree in Physics (4th year). Universidad de Granada (Granada, Spain)	Credits: 1,5

— *Master and PhD courses*

Total number of hours: 3h

2021-2022	Selected Topics in the Theories of Gravity (LOFY.04.017) University of Tartu (Tartu, Estonia)	Hours: 3h
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PRIVATE CLASSES

— *Student's preparation for exams at University*

- ☐ **Física General I.** Physics degree, first year course (UGR)
- ☐ **Física General II.** Physics degree, first year course (UGR)

— *Primary and Secondary Education*

- ☐ **Mathematics.** Second, third and fourth courses of Secondary Education (Ceuta, Spain)

Visits to other institutions

LONG VISITS (MORE THAN 1 MONTH)

1. **Gravity group of the Institute of Physics in Tartu (3 months)**
Institute of Physics (Univ. of Tartu). Tartu (Estonia). September 1 – November 30, 2019
Funding: Plan Propio de la UGR (program: *Estancias breves en centros de investigación nacionales y extranjeros*); project FIS2016-78198-P; and contract FPU15/02864.

SHORT VISITS (LESS THAN 1 MONTH)

1. **Modified gravity group of the Universidad de Valencia (1 week)**
Facultad de Física (UV). Valencia (Spain). 11 – 15 December 2017
2. **Department of Theoretical Physics of the Universidad Complutense de Madrid (3 days)**
Facultad de Ciencias Físicas (UCM). Madrid (Spain). 27 – 29 January 2020
3. **Department of Fundamental Physics de la Universidad de Salamanca (2 days)**
Facultad de Ciencias Físicas (USAL). Salamanca (Spain). 30 – 31 January 2020
4. **Instituto de Astrofísica de Andalucía (1 week)**
IAA. Granada (Spain). 21 – 27 February 2022
5. **Department of Fundamental Physics of the University of Salamanca (2 weeks)**
Facultad de Ciencias Físicas (USAL). Salamanca (Spain). 14 – 27 March 2022
6. **Department of Theoretical Physics and Physics of the Cosmos of the University of Granada (1 week)**
Facultad de Ciencias (UGR). Granada (Spain). 09 – 15 May 2022
7. **Instituto de Astrofísica de Andalucía (1 week)**
IAA. Granada (Spain). 17 – 23 October 2022

Other academic activities

PEER-REVIEW IN SCIENTIFIC JOURNALS

See statistics in [\[Web of Science profile\]](#).

- ❑ 2022: Phys. Rev. D (2)
- ❑ 2021: Phys. Dark Univ. (1) | Phys. Rev. D (1) | Int. J. Geom. Methods Mod. Phys. (1) | Phys. Rev. Lett. (1).

MEMBERSHIP AND PARTICIPATION IN SCIENTIFIC SOCIETIES

- ❑ Member of the Royal Spanish Physics Society (RSEF) since 26 February 2016.
- ❑ Participant in the Network of Relativity and Gravitation (RTRG) since 2018.
- ❑ Member of the Spanish Society of Gravitation and Relativity (SEGRE) since 2019.
- ❑ Member of the Asociación de Científicos Españoles en Estonia (ACEE) since its foundation in 2022.

Contributions in popular science

INFORMATIVE TALKS AND PUBLIC WORKSHOPS

1. **Un paseo por la Relatividad**
 - Colegio San Agustín, Ceuta (Spain), April 28, 2017. Addressed to secondary students.
 - IES Padre Manjón, Granada (España), March 16, 2017 (Organized by Royal Spanish Society of Physics). Addressed to secondary students.
2. **Agujeros negros en Relatividad. ¿Cómo funcionan? (Science week 2017, 2018)**
 - Facultad de Ciencias, Granada (Spain). November 2017 (days 6-9, 13-15). Addressed to 7 groups of secondary students.
 - Facultad de Ciencias, Granada (Spain). November 2018. Addressed to 3 groups of secondary students.
3. **La física de las partículas elementales (Science week 2018)**
 - Facultad de Ciencias, Granada (Spain). November 2018. Addressed to one group of secondary students.

4. Descubriendo la gravedad (*Aula Científica permanente 2018*)

· Facultad de Ciencias, Granada (Spain). May, 2018 (days 18 and 25). Addressed to 3 groups of primary students.

5. ¿Dónde están los electrones? (*Aula Científica permanente 2019*)

· Facultad de Ciencias, Granada (Spain). May, 2019 (days 3 and 10). Addressed to 2 groups of secondary students.

Other skills

LANGUAGES

— Languages. Level

	Comprehension		Speaking		Writing
	Reading	Listening	Interaction	Production	
English (B2.2)	C1	B2	B2	B2	C1
Spanish (C2)	Mother tongue				

— Languages. Certificates (accredited level)

☐ First Certificate in English (B2 Grade B)

Granada (Spain), February 2017. Given by Cambridge University (UK)

— Courses abroad

☐ EF English course

Brighton (UK), August 2014. Grade B2.

COMPUTATIONAL SKILLS

— Scientific programming

■■■■■ xAct (Mathematica package)
 ■■■■□ Mathematica
 ■■■□□ C++
 ■■□□□ FORTRAN
 ■□□□□ Gnuplot

— Scientific writing

■■■■■ LaTeX
 ■■■■■ Lyx

— Web design

■■■□□ html

— Image and sound edition

■■■■□ Inkscape
 ■■■□□ Adobe Photoshop
 ■■□□□ Audacity
 ■■□□□ Sony Vegas Pro
 ■■□□□ Adobe Premiere
 ■□□□□ Adobe After Effects

— Others

■■□□□ Git
 ■■■■□ MS Word
 ■■■■□ MS Excel

Miscellany

ACADEMIC AWARDS

1. First prize. Outstanding student of the Autonomous City of Ceuta.

01 July 2011. Ceuta (Spain). Given by: Rotary Club.

2. Award for excellence in academic performance.

06 June 2016. Granada (Spain). Given by: Univ. Granada and Caja Rural de Granada.

POPULAR SCIENCE AWARDS**1. First prize at the Carbono tournament on popular science 2017.**

May 2017. Facultad de Ciencias, Granada (Spain). Given by: Babel.

SPORT QUALIFICATIONS**1. First dan in Judo.**

21 June 2009. El Puerto de Santa María (Spain). Given by: Real Federación Española de Judo y Deportes Asociados.

OTHERS

☐ I run the scientific Youtube channel '**Dimensión Gamma**'.