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**Gil Jannes — CV**

# **Curriculum Vitae**

(including list of publications)

Name: **Gil Jannes**

Date: **November 4, 2021**

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## PERSONAL DATA

**First Name:** Gil  
**Nationality:** Belgian  
**Gender:** Male  
**Tel.:** +34 674 537 195  
**Private address:** Calle del Enfriadero 21 – 28420 Galapagar (Spain)  
**Marital status:** Living together, two sons

**Family Name:** Jannes  
**Date of birth:** 09/01/1975 in Brussels, Belgium  
**Spanish document (NIE):** X6209588-W  
**E-mail:** gil.jannes@gmail.com, gil.jannes@ucm.es

## CURRENT PROFESSIONAL POSITION

**Centre:** Department of Financial and Actuarial Economics & Statistics  
**Institution:** Universidad Complutense de Madrid (Spain)  
**Postal address:** Facultad de Ciencias Económicas y Empresariales, Campus de Somosaguas, 28223 Pozuelo de Alarcón (Madrid, Spain)  
**Position held:** Assistant Professor (“Profesor Ayudante Doctor”)  
**ORCID code:** 0000-0002-1072-3267

## ACADEMIC BACKGROUND

- **PHD IN THEORETICAL PHYSICS** – *Sobresaliente Cum Laude by unanimity*  
Universidad Complutense de Madrid, July 9th, 2009  
(PhD programme quality-certified by the MEC – Spanish Ministry of Education)  
**Thesis title:** “Emergent Gravity: the BEC paradigm”  
[arXiv:0907.2839 [gr-qc] - ISBN 978-84-692-8447-6].  
**Advisers:** Carlos Barceló (Instituto de Astrofísica de Andalucía, CSIC)  
Luis J. Garay (Universidad Complutense de Madrid)
- **M.SC. IN PHYSICS** – *Magna Cum Laude*  
Katholieke Universiteit Leuven (Belgium), September 16th, 2005  
**Thesis title:** “Acoustic Black Holes in Bose-Einstein Condensates”  
**Advisers:** Luis J. Garay (Universidad Complutense de Madrid)  
Antoine Van Proeyen (Katholieke Universiteit Leuven)  
Title homologated in Spain as “Licenciado en Física”
- **BACHELOR IN PHILOSOPHY** – *Magna Cum Laude*  
Katholieke Universiteit Leuven (Belgium), September 30th, 2004
- **M.SC. IN ELECTRONICAL ENGINEERING** – *Cum Laude*  
Katholieke Universiteit Leuven (Belgium), September 17th, 1999  
**Thesis title:** “Simulation of InGaAs/GaAs Quantum Well Lasers grown on (100) and (111) GaAs substrates”  
**Advisers:** José L. Sánchez de Rojas Aldavero (Universidad Politécnica de Madrid)  
Robert Mertens (IMEC / Kath. Universiteit Leuven)  
Title homologated in Spain as “Ingeniero en Electrónica”

## CONTRACTS AND GRANTS

- ASSISTANT PROFESSOR  
**Period:** Since Nov 2017  
Dept. of Financ. and Actuarial Economics & Statistics  
Universidad Complutense de Madrid
- PRIVATE UNIVERSITY PROFESSOR  
**Period:** Oct 2015 – Oct 2017  
Department of Science and Technology  
Universidad Europea de Madrid
- POSTDOCTORAL FELLOW  
**Period:** Sep 2013 – Sep 2015  
Modelling and Numerical Simulation group,  
Universidad Carlos III de Madrid  
**Funding Organism:** Universidad Carlos III de Madrid
- POSTDOCTORAL RESEARCH CONTRACT  
**Period:** Apr 2013 – Sep 2013  
Valencia Nanophotonics Technology Center  
**Funding Organism:** Universidad Politécnica de Valencia
- POSTDOCTORAL RESEARCH CONTRACT  
**Period:** Sep 2010 – Jul 2012  
Low Temperature Laboratory, Aalto University (Finland)  
**Funding Organism:** Spanish Ministry for Science and Innovation (Sep 2010 – Apr 2012);  
Aalto University (May - Jul 2012)
- POSTDOCTORAL RESEARCH CONTRACT  
**Period:** April 2010 – Dec 2010  
Université de Nice Sophia Antipolis (France)  
**Funding Organism:** CNRS  
(Centre National de la Recherche Scientifique)
- PHD RESEARCH CONTRACT  
**Period:** Jan 2006 – Dec 2009  
Instituto de Astrofísica de Andalucía, CSIC  
**Funding Organism:** CSIC (“I3P” fellowship)
- POSTGRADUATE RESEARCH GRANT  
**Period:** Jan 2005 – Dec 2005  
Instituto de Estructura de la Materia, CSIC  
**Funding Organism:** CSIC (“I3P” grant)
- ACADEMIC REINTEGRATION GRANT  
**Period:** Jan 2004 – Jun 2004  
Katholieke Universiteit Leuven  
**Funding Organism:** Flemish Ministry of Education

## ACADEMIC ACCREDITATION (Spain)

- “Profesor Ayudante Doctor”: certified by ANECA, 08/06/2012.
- “Profesor Contratado Doctor + Profesor Universidad Privada”: certified by ANECA, 15/04/2015.
- 1 research “sexenio” (2005-2011) certified

## ACADEMIC MANAGEMENT

- ACADEMIC COORDINATOR for the Bachelor’s Degree in Business Administration, Faculty of Economics, UCM: since April 2020
- DEAN’S DELEGATE: since April 2020
- MEMBER OF COMMITTEE OF INTERNATIONAL RELATIONS: Erasmus coordinator for outgoing students to Nordic countries, Faculty of Economics, UCM: since April 2018
- ACADEMIC COORDINATOR for the Bachelor’s Degree in Finances, Banking and Insurances, Faculty of Economics, UCM: 12/2018–06/2020

## PUBLICATIONS: PHYSICS

### • Original research articles in JCR-ranked journals

- (1) A. Alonso-Serrano & G. Jannes,  
*Conceptual Challenges on the Road to the Multiverse*,  
*Universe* **5**, 10–212 (2019).  
Impact Factor (IF): 2,165 Area: Astronomy & Astrophysics Ranking: 34/69 (Q2)
- (2) L. C. Barbado, C. Barceló, L. J. Garay & G. Jannes,  
*Hawking versus Unruh effects, or the difficulty of slowly crossing a black hole horizon*,  
*JHEP* **2016**, 161 (2016).  
IF 6,023 Physics, Particles and Fields 4/28 (Q1)
- (3) L. C. Barbado, C. Barceló, L. J. Garay & G. Jannes,  
*A tensorial description of particle perception in black-hole physics*,  
*Phys. Rev. D* **94**, 064004 (2016).  
IF 4,643 Physics, Particles and Fields 6/27 (Q1)
- (4) G. Jannes & G. Volovik,  
*Emergent physics on Mach principle and the rotating vacuum*  
*JETP Lett.* **102**, 73 (2015)  
IF 1,557 Physics, Multidisciplinary 37/78 (Q2)
- (5) G. Jannes,  
*Condensed matter lessons about the origin of time*,  
*Found. Phys.* **45**, 279 (2015).  
IF 1,144 Physics, Multidisciplinary 40/84 (Q2)
- (6) C. Barceló, R. Carballo-Rubio, L. J. Garay & G. Jannes  
*The lifetime problem of evaporating black holes: Mutiny or resignation*  
*Class. & Quant. Grav.* **32**, 035012 (2015)  
IF 3,168 Physics, Multidisciplinary 11/78 (Q1)
- (7) C. Barceló, R. Carballo-Rubio, L. J. Garay & G. Jannes  
*Electromagnetism as an emergent phenomenon: a step-by-step guide*  
*New J. Phys.* **16**, 123028 (2014)  
IF 3,671 Physics, Multidisciplinary 10/78 (Q1)
- (8) C. García Meca, C. Barceló, S. Carloni, G. Jannes, J. Sánchez Dehesa & A. Martínez,  
*Transformational acoustic metamaterials based on pressure gradients*,  
*Phys. Rev. B* **90**, 024310 (2014)  
IF 3,736 Physics, Condensed Matter 14/67 (Q1)
- (9) C. García Meca, C. Barceló, S. Carloni, G. Jannes, J. Sánchez Dehesa & A. Martínez,  
*Analogue transformation acoustics and the compression of spacetime*,  
*Photon. Nanostruct. Fundam. Appl.* **12**, 312 (2014)  
IF 1,792 Physics, Applied 46/128 (Q2)
- (10) C. García Meca, C. Barceló, S. Carloni, G. Jannes, J. Sánchez Dehesa & A. Martínez,  
*Spacetime transformation acoustics*,  
*Wave Motion* **51**, 785 (2014)  
IF 1,513 Physics, Multidisciplinary 33/78 (Q2)
- (11) C. García Meca, C. Barceló, S. Carloni, G. Jannes, J. Sánchez Dehesa & A. Martínez,  
*Analogue Transformations in Physics and their Application to Acoustics*,

- Nature Sci. Rep. **3**, 2009 (2013)  
 IF 5,078 Science, Multidisciplinary 5/55 (Q1)
- (12) G. Jannes & G. E. Volovik,  
*The cosmological constant: A lesson from the effective gravity of topological Weyl media*,  
 JETP Lett. **96**, 215 (2012).  
 IF 1,557 Physics, Multidisciplinary 37/78 (Q2)
- (13) L. C. Barbado, C. Barceló, L. J. Garay & G. Jannes,  
*The trans-Planckian problem as a guiding principle*,  
 JHEP **2011**, 112 (2011).  
 IF 6,220 Physics, Particles and Fields 4/27 (Q1)
- (14) G. Jannes,  
*Hawking radiation of  $E < m$  massive particles in the tunneling formalism*,  
 JETP Lett. **94**, 18 (2011).  
 IF 1,557 Physics, Multidisciplinary 37/78 (Q2)
- (15) C. Barceló, L.J. Garay & G. Jannes,  
*Quantum Non-Gravity and Stellar Collapse*,  
 Found. Phys. **41**, 1532 (2011).  
 IF 1,144 Physics, Multidisciplinary 40/84 (Q2)
- (16) G. Jannes, P. Maïssa, T. G. Philbin & G. Rousseaux,  
*Hawking radiation and the boomerang behaviour of massive modes near a horizon*,  
 Phys. Rev. D **83**, 104028 (2011).  
 IF 4,964 Physics, Particles and Fields 5/27 (Q1)
- (17) G. Jannes, R. Piquet, P. Maïssa, C. Mathis & G. Rousseaux,  
*Experimental demonstration of the supersonic-subsonic bifurcation in the circular jump: A hydrodynamic white hole*,  
 Phys. Rev. E **83**, 056312 (2011).  
 IF 2,352 Physics, Mathematical 4/54 (Q1)
- (18) C. Barceló, L. J. Garay & G. Jannes,  
*Two faces of quantum sound*,  
 Phys. Rev. D **82**, 044042 (2010).  
 IF 4,964 Physics, Particles and Fields 5/27 (Q1)
- (19) G. Jannes,  
*Some comments on 'The Mathematical Universe'*,  
 Found. Phys. **39**, 397 (2009).  
 IF 1,144 Physics, Multidisciplinary 40/84 (Q2)
- (20) C. Barceló, L. J. Garay & G. Jannes,  
*Sensitivity of Hawking radiation to superluminal dispersion relations*,  
 Phys. Rev. D **79**, 024016 (2009).  
 IF 4,964 Physics, Particles and Fields 5/27 (Q1)
- (21) C. Barceló & G. Jannes,  
*A real Lorentz-FitzGerald contraction*,  
 Found. Phys. **38**, 191 (2008).  
 IF 1,144 Physics, Multidisciplinary 40/84 (Q2)
- (22) C. Barceló, A. Cano, L. J. Garay & G. Jannes,  
*Quasi-normal mode analysis in BEC acoustic black holes*,  
 Phys. Rev. D **75**, 084024 (2007).  
 IF 4,964 Physics, Particles and Fields 5/27 (Q1)

- (23) C. Barceló, A. Cano, L. J. Garay & G. Jannes,  
*Stability analysis of sonic horizons in Bose–Einstein condensates*,  
Phys. Rev. D **74**, 024008 (2006).  
IF 4,964 Physics, Particles and Fields 5/27 (Q1)

• **Book contributions: original research**

- (1) G. Jannes & G. Rousseaux,  
“The circular jump as a hydrodynamic white hole.”  
In: V. Cardoso et al. (eds.), *Analogue spacetimes: The first thirty years*, Livraria da Física Editora, São Paulo, Brazil, ISBN: 978-85-7861-231-3 (2013).
- (2) J. Chaline, G. Jannes, P. Maïssa & G. Rousseaux,  
“Some aspects of dispersive horizons: lessons from surface waves”  
In: D. Faccio et al. (eds.), *Analogue Gravity Phenomenology*, Springer, ISBN: 978-3-319-00265-1 (2013).
- (3) G. Jannes,  
“On the condensed matter scheme for emergent gravity and interferometry.”  
In: D. Halsey & W. Raynor (eds.), *Handbook of Interferometers; Research, Technology and Applications*, Nova Science, ISBN 978-1-60741-050-8 (2009).

• **Conference Proceedings**

- (1) L. J. Garay, C. Barceló, R. Carballo-Rubio, & G. Jannes,  
*Do stars die too long?*,  
WSPC Proceedings of the 14th Marcel Grossmann meeting, 1718 (2015)
- (2) C. Barceló, R. Carballo-Rubio, L. J. Garay & G. Jannes,  
*Do transient white holes have a place in Nature?*,  
J. Phys. Conf. Ser. **600**, 012033 (2015).
- (3) C. Barceló, L. C. Barbado, L. J. Garay & G. Jannes,  
*Avoiding the trans-Planckian problem in black hole physics*,  
Springer Proc. Math. & Stat. **60**, 129 (2014)
- (4) C. García Meca, S. Carloni, C. Barceló, G. Jannes, J. Sánchez Dehesa & A. Martínez,  
*Analogue transformation acoustics: Generalizing transformation techniques to non-form-invariant equations*,  
IEEE Conf. Proc., 7th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics (METAMATERIALS) pp. 235–237 (2013).
- (5) G. Jannes, T. G. Philbin & G. Rousseaux,  
*Hawking tunneling and boomerang behaviour of massive particles with  $E < m$* ,  
AIP Conf. Proc. **1458**, 435 (2012).
- (6) G. Jannes, R. Piquet, J. Chaline, P. Maïssa, C. Mathis & G. Rousseaux,  
*Horizon effects for surface waves in wave channels and circular jumps*,  
J. Phys. Conf. Ser. **314**, 012031 (2011).
- (7) C. Barceló, L. J. Garay & G. Jannes,  
*The two faces of sound in BECs*,  
AIP Conf. Proc. **1318**, 136 (2010).
- (8) G. Jannes, C. Barceló & L. J. Garay,  
*How sensitive is Hawking radiation to superluminal dispersion relations?*,  
AIP Conf. Proc. **1122**, 304 (2009).
- (9) G. Jannes, C. Barceló, A. Cano & L. J. Garay,

- QNM spectrum in (1+1)-dimensional BEC black holes,  
PoS Qg-Ph: 021 (2007).
- (10) C. Barceló, A. Cano, G. Jannes & L. J. Garay,  
*Probing effects of modified dispersion relations with Bose-Einstein condensates*,  
PoS Qg-Ph: 007 (2007).

• **Others (technical reports)**

- (1) C. García Meca, C. Barceló, S. Carloni, G. Jannes, J. Sánchez Dehesa & A. Martínez,  
*Analogue Transformation Acoustics, An alternative theoretical framework for acoustic meta-materials*.  
Final report for ESA project Ariadna 11-1301b (link)
- (2) C. García Meca, C. Barceló, S. Carloni, G. Jannes, J. Sánchez Dehesa & A. Martínez,  
*Time transformations, anisotropy and analogue transformation elasticity*.  
Final report for ESA project Ariadna 11-1301bCCN (link)

**PUBLICATIONS: STATISTICS**

• **Original research articles in JCR-ranked journals**

- (1) J. Barreal, B. Ferrer-Rosell, E. Cristobal-Fransi & G. Jannes,  
*Influence of Service Valuation and Package Cost on Market Segmentation: The Case of Online Demand for Spanish and Andorra Ski Resorts*,  
*Sustainability* 13(5), 2938 (2021)  
JCR IF 3.251 Area: Environmental Sciences Ranking: 124/274 (Q2)
- (2) J. Barreal & G. Jannes,  
*Spatial and Temporal Wildfire Decomposition as a Tool for Assessment and Planning of an Efficient Forest Policy in Galicia (Spain)*,  
*Forests* 11(8), 811 (2020)  
JCR IF 2.221 Area: Forestry Ranking: 17/68 (Q1)

• **Conference Proceedings**

- (1) J. Barreal & G. Jannes,  
*Análisis clúster del gasto del turista internacional en las denominaciones de origen de aceite de oliva en España*,  
Expoliva XIXth Scientific-Technical Symposium, ECO-12 (2019)  
ISBN 978-84-946839-2-3
- (2) G. Jannes & J. Barreal,  
*Análisis temporal del gasto del turista internacional en la DOP "Sierra de Cádiz"*,  
Expoliva XIXth Scientific-Technical Symposium, ECO-08 (2019)  
ISBN 978-84-946839-2-3

**BIBLIOMETRIC DATA (as of 13/03/2021)**

Source	Total citations	h-index
Google scholar	660	15
Thomson SCI	328	11

Most cited article:

C. Barceló, R. Carballo-Rubio, L. J. Garay & G. Jannes, *The lifetime problem of evaporating black holes: Mutiny or resignation*, *CQG* (2015):  
91/51 citations (Google Scholar/Thomson)

## PRESENTATIONS IN SEMINARS AND CONGRESSES

### • Congresses

- (1) "Cluster Analysis of International Tourism Demand in Spanish wine Protected Denominations of Origin (PDO) Areas"  
Oral contribution, 9th International Conference on Tourism (ICOT 2019). Braga (Portugal), June 2019
- (2) "Panel Data Analysis of International Tourist Expenditure Flows in Key Destination Countries through Macroeconomic Magnitudes."  
Oral contribution, 9th International Conference on Tourism (ICOT 2019). Braga (Portugal), June 2019
- (3) "Socioeconomic and environmental factor analysis of international tourism expenditure in Spain"  
Oral contribution, XXth Congress AECIT (Spanish Association of Scientific Experts in Tourism), Roquetas del Mar (Spain), 21-23/11/2018
- (4) "Autoregressive and volatility analysis of the international tourist expenditure in Spain"  
Oral contribution, XXth Congress AECIT (Spanish Association of Scientific Experts in Tourism), Roquetas del Mar (Spain), 21-23/11/2018
- (5) "Mach's principle in Emergent Gravity"  
Oral contribution, Spanish-Portuguese Relativity Meeting (EREP2018), *Palencia (Spain)*, 02–06/09/18.
- (6) "A robustness condition for ultra-compact alternatives to black holes"  
Oral Contribution, 10th Jerte Advanced Relativity Meeting, *Navaconcejo (Spain)*, 12–15/04/18.
- (7) "Perception tensor and Hawking versus Unruh effect near a black hole"  
Oral contribution, Spanish-Portuguese Relativity Meeting (EREP2017), *Málaga (Spain)*, 12–15/09/17.
- (8) "Friedmann equations: Relativistic versus Newtonian derivation"  
Oral Contribution, 8th Jerte Advanced Relativity Meeting, *Navaconcejo (Spain)*, 23–26/05/16.
- (9) "Towards Analogue Transformation Elasticity"  
**Invited speaker**, ESA (European Space Agency) workshop on Analogue Transformation Acoustics, *Noordwijk (Netherlands)*, 24/09/2014.
- (10) "Cosmological constant: lessons from condensed matter?"  
Oral contribution, VIIIth Iberian Cosmology Meeting, *Granada (Spain)*, 24–26/04/13.
- (11) "From analogue gravity to acoustic cloaking"  
Oral contribution, 5th Jerte Advanced Relativity Meeting, *Navaconcejo (Spain)*, 21–24/03/13.
- (12) "Hydrodynamic black/white hole analogues and the trans-Planckian problem"  
**Invited speaker**, ICTP Workshop on Effective Gravity in Fluids and Superfluids, *Trieste (Italy)*, 9–13/07/12.
- (13) "Hydrodynamic black hole analogues and the trans-Planckian problem"  
**Invited speaker**, Microkelvin workshop, *Smolenice (Slovakia)*, 19–23/03/12.
- (14) "Hawking tunneling and boomerang behaviour of massive particles with  $E < m$ "

- Oral contribution + proceeding, Spanish Relativity Meeting (ERE2011), *Madrid (Spain)*, 29/08–02/09/11.
- (15) “Horizon effects for surface waves in wave channels and circular jumps”  
Oral contribution + proceeding, Spanish Relativity Meeting (ERE2010), *Granada (Spain)*, 6–10/09/10.
- (16) “The two faces of quantum sound”  
**Invited speaker**, 2<sup>nd</sup> Nice Colloquium on Analogue Gravity, Laboratoire Dieudonné, *Nice University (France)*, 17–18/06/10.
- (17) “How sensitive is Hawking radiation to superluminal dispersion relations?”  
Oral contribution + proceeding, Spanish Relativity Meeting (ERE2008), *Salamanca (Spain)*, 15–19/09/08.
- (18) “Relativity for Newtonian Minds”  
Oral contribution, 18th International Conference on General Relativity and Gravitation (GRG18), *Sydney (Australia)*, 8–13/07/07.
- (19) “QNM spectrum in (1+1)-dimensional BEC black holes”  
Oral contribution + proceeding, Congress “From Quantum to Emergent Gravity: Theory and Phenomenology”, SISSA, *Trieste (Italy)*, 11–15/06/2007.
- (20) “Stability of acoustic black holes in Bose-Einstein condensates”  
Oral contribution, 2nd workshop “Aspects of Quantum Gravity”, *Universidade da Beira Interior, Covilhã (Portugal)*, 23–24/09/05.

• **Seminars (selection)**

- (1) “Stellar evolution, black holes, and their relation to statistics”  
Instituto de Matemática Interdisciplinar (IMI) & Departamento de Economía Financiera y Actuarial y Estadística, Universidad Complutense, *Madrid (Spain)*, 14/03/2018.
- (2) “The cosmological constant problem: a lesson from Helium-3”  
De Madrid al Cosmos Seminar Cycle, Universidad Complutense, *Madrid (Spain)*, 03/06/2014.
- (3) “From Analogue Gravity to Acoustic Cloaking”  
Fluid Dynamics Seminars, Institut Pprime, *Poitiers (France)*, 14/01/14.
- (4) “From Analogue Gravity to Elastic Cloaking”  
Modelling & Numerical Simulation seminars, Carlos III University, *Madrid (Spain)*, 08/10/13.
- (5) “Horizon effects for surface waves: the wave channel and the circular jump”  
Theoretical Physics Seminars, Instituto de Estructura de la Materia – CSIC, *Madrid (Spain)*, 02/11/10.
- (6) “Horizon effects for surface waves”  
Low Temperature Seminar, Low Temperature Laboratory – Aalto University, *Helsinki (Finland)*, 27/10/10.
- (7) “Analogue gravity in Bose–Einstein condensates”  
Dynamical Systems Seminars, Laboratoire Dieudonné, *Nice University (France)*, 21/05/10.
- (8) “Sensitivity of Hawking radiation to superluminal dispersion relations”  
General Physics seminar, University of Canterbury, *Christchurch (New Zealand)*, 20/03/09.
- (9) “Sensitivity of Hawking radiation to superluminal dispersion relations”  
Mathematics and Physics seminars, Victoria University, *Wellington (New Zealand)*, 12/03/09.
- (10) “Quasinormal Modes in BEC Acoustic Black Holes”

- Mathematics and Physics seminars, Victoria University, *Wellington (New Zealand)*, 05/03/09.
- (11) “Sensitivity of Hawking radiation to superluminal dispersion relations”  
Relativity and Cosmology Seminars, Instituto de Física Fundamental – CSIC, *Madrid (Spain)*, 07/11/08.
- (12) “Black holes in Bose–Einstein condensates”  
Gravity Conferences, Instituto de Estructura de la Materia - CSIC, *Madrid (Spain)*, 26/04/07.
- (13) “The Brout-Englert-Higgs mechanism”  
Theoretical Physics Seminars, Instituto de Estructura de la Materia - CSIC, *Madrid (Spain)*, 19/02/07.
- (14) “The Brout-Englert-Higgs mechanism”  
Colloquia on Gravitation and Cosmology, Instituto de Astrofísica de Andalucía - CSIC, *Granada (Spain)*, 26/01/07.

## PARTICIPATION IN SELECTED RESEARCH PROJECTS

### A. International Projects

1. TIME TRANSFORMATIONS, ANISOTROPY AND ANALOGUE TRANSFORMATION ELASTICITY (Ariadna project 11-1301b - Ref. CCN-4000104572/12/NL/KML)  
**Period:** 01/04/2013 – 31/03/2014 (12 months)  
**Funding Entity:** European Space Agency (ESA)  
**Amount funded:** 35 000€  
**Centre:** Nanophotonics Technology Center (Polytechnic University of Valencia)  
**Figure:** Participating researcher  
**Scientist in charge:** Prof. Alejandro Martínez (UPV)
2. ANALOGUE TRANSFORMATIONAL ACOUSTIC: AN ALTERNATIVE THEORETICAL FRAMEWORK FOR ACOUSTIC METAMATERIALS (Ariadna project 11-1301b - Ref. 4000104572/11/NL/KML)  
**Period:** 15/11/2011 – 15/07/2012 (8 months)  
**Funding Entity:** European Space Agency (ESA)  
**Amount funded:** 16 200€  
**Centre:** Aalto University (subcontracted by Polytechnic University of Valencia)  
**Figure:** Participating researcher  
**Scientist in charge:** Prof. Alejandro Martínez (UPV)
3. MICROKELVIN (FP7/2007-2013 grant 228464)  
**Period:** 01/04/2009 – 30/09/2013 (4 years & 6 months)  
**Funding Entity:** European Union (FP7 Framework Programme)  
**Amount funded:** 4.2M€  
**Centre:** Aalto University (Finland) + 10 other European Universities  
**Figure:** Participating researcher  
**Overall coordinator:** Prof.em. Matti Krusius (Aalto Univ.)

### B. National Projects (Spain)

4. QUANTUM GRAVITATIONAL UNIVERSE: FIELDS, LOOPS AND WEYL GRAVITY (PID2020-118159GB-C44)  
**Duration:** 3 years (as of 01/09/2021)

- Funding Entity:** Spanish Ministry for Science and Innovation (MICINN)  
**Amount funded:** 42 350€  
**Centre:** Universidad Complutense de Madrid  
**Figure:** Participating researcher
5. QUANTUM UNIVERSE & QUANTUM VACUUM: EMERGENT GRAVITY, BLACK HOLES AND QUANTUM FRICTION (FIS2017-86497-C2-1-P)  
**Period:** 01/01/2018 – 30/09/2021 (3 years & 9 months)  
**Funding Entity:** Spanish Ministry for Science and Innovation (MICINN)  
**Amount funded:** 20 000€  
**Centre:** Instituto de Astrofísica de Andalucía, CSIC  
**Figure:** 2nd Scientist in charge & 2nd Coordinator (together with C. Barceló Serón – IAA, CSIC)
  6. GRAVITY AND THE QUANTUM UNIVERSE: EMERGENCE, GRAVITATIONAL COLLAPSE AND TRANSFORMATION PHYSICS (FIS2014-54800-C2-1)  
**Period:** 01/01/2015 – 31/12/2017 (3 years)  
**Funding Entity:** Spanish Ministry for Science and Innovation (MICINN)  
**Amount funded:** 12 000€  
**Centre:** Instituto de Astrofísica de Andalucía, CSIC  
**Figure:** Participating researcher  
**Scientist in charge:** Dr. Carlos Barceló Serón (IAA, CSIC)
  7. ANALOGUE GRAVITY AND BLACK HOLE PHYSICS (FIS2011-30145-C03-01)  
**Period:** 01/01/2012 – 31/12/2014 (3 years)  
**Funding Entity:** Spanish Ministry for Science and Innovation (MICINN)  
**Amount funded:** 50 000€  
**Centre:** Instituto de Astrofísica de Andalucía, CSIC  
**Figure:** Participating researcher  
**Scientist in charge:** Dr. Carlos Barceló Serón (IAA, CSIC)
  8. SYMMETRY, NUMERICAL METHODS AND ANALOGUE MODELS IN CLASSICAL AND QUANTUM GRAVITY (FIS2008-06078-C03-01)  
**Period:** 01/01/2009 – 31/12/2011 (3 years)  
**Funding Entity:** Spanish Ministry for Science and Innovation (MICINN)  
**Amount funded:** 98 000€  
**Centre:** Instituto de Astrofísica de Andalucía, CSIC  
**Figure:** Participating researcher  
**Scientist in charge:** Dr. Carlos Barceló Serón (IAA, CSIC)
  9. GRAVITATION: ANALOGUE MODELS, NUMERICAL METHODS AND UNIFICATION WITH OTHER INTERACTIONS (FQM 2288)  
**Period:** 01/03/2007 – 01/03/2010 (3 years)  
**Funding Entity:** Andalusian Regional Council  
**Amount funded:** 73,900€  
**Centre:** Instituto de Astrofísica de Andalucía, CSIC  
**Figure:** Participating researcher  
**Scientist in charge:** Dr. Carlos Barceló Serón (IAA, CSIC)
  10. NON-PERTURBATIVE GRAVITY AND BLACK HOLES: SYMMETRIES, NUMERICAL METHODS AND CONDENSED MATTER ANALOGIES (FIS2005-05736-C03-02)  
**Period:** 31/12/2005 – 31/12/2008 (3 years)

- Funding Entity:** Spanish Ministry of Education and Science (MEC)  
**Amount funded:** 60 000€  
**Centre:** Instituto de Astrofísica de Andalucía, CSIC  
**Figure:** Participating researcher  
**Scientist in charge:** Dr. Guillermo Mena Marugán (IEM, CSIC)
11. CONSTRUCTION OF QUANTUM GRAVITY THEORIES FROM ANALOGUE MODELS (FIS2006-26387-E)  
**Period:** 01/07/2007 – 29/09/2008 (1 year & 3 months)  
**Funding Entity:** Spanish Ministry of Education and Science (MEC)  
**Amount funded:** 19 600€  
**Centre:** Instituto de Astrofísica de Andalucía, CSIC  
**Figure:** Participating researcher  
**Scientist in charge:** Prof. Luis J. Garay Elizondo (Univ. Complutense de Madrid)
12. BLACK HOLES AND GRAVITATIONAL WAVES: QUANTUM AND SEMICLASSICAL ASPECTS (BFM2002-04031-C02-02)  
**Period:** 01/10/2002 – 30/09/2005 (3 years)  
**Funding Entity:** Spanish Ministry of Education and Science (MEC)  
**Amount funded:** 25 000€  
**Centre:** Instituto de Estructura de la Materia, CSIC  
**Figure:** Participating researcher  
**Scientist in charge:** Dr. Jesús Fernando Barbero González (IEM, CSIC)

### RESEARCH SUPERVISION

- MASTER'S THESIS, SUPERVISOR  
**Programme:** Master in Astronomy and Astrophysics  
**Centre:** International University of Valencia  
**Student:** Jokin Eguia Sánchez      **Period:** 01–07/2021  
**Title:** Study of the properties of Gödel's universe in condensed matter analogues  
**Grade:** 7.0/10
- MASTER'S THESIS, SUPERVISOR  
**Programme:** Master in Astronomy and Astrophysics  
**Centre:** International University of Valencia  
**Student:** Cristian Ariza Beltrán      **Period:** 06–12/2017  
**Title:** A robustness condition for ultra-compact alternatives to black holes  
**Grade:** 8.0/10
- MASTER'S THESIS, SUPERVISOR  
**Programme:** Master in Astronomy and Astrophysics  
**Centre:** International University of Valencia  
**Student:** Claudio Patricio Rogel Cárdenas      **Period:** 01–12/2017  
**Title:** Lorentz Invariance Violations based on simulations of the observation of GRB neutrinos  
**Grade:** 8.0/10
- MASTER'S THESIS, SUPERVISOR  
**Programme:** Master in Astronomy and Astrophysics  
**Centre:** International University of Valencia  
**Student:** Julio Hidalgo      **Period:** 06–12/2015

**Title:** Pre-relativistic limits of the Friedmann equations

**Grade:** 8.5/10

- MASTER INTERNSHIP, 1ST YEAR, CO-SUPERVISOR

**Programme:** Fluid Mechanics Engineering

**Centre:** Université Pierre et Marie Curie Paris VI & Université de Nice Sophia Antipolis

**Student:** Romain Piquet      **Period:** 05–07/2010

**Title:** The circular jump: application to black-hole physics

**Output:** Results published in Phys. Rev. E

## TEACHING

- **Course:** Statistics II      **ECTS credits:** 6      **Lecturing hours:** 60  
**Study programme:** Bachelor in Business Administration, 2nd year  
**Centre:** Universidad Complutense de Madrid      **Year:** 2019/20  
**Language of Teaching:** English
- **Course:** Statistics II      **ECTS credits:** 6      **Lecturing hours:** 45 (3/4 of shared course)  
**Study programme:** Bachelor in Economy, 2nd year  
**Centre:** Universidad Complutense de Madrid      **Year:** 2019/20  
**Language of Teaching:** English
- **Course:** Statistics II      **ECTS credits:** 6      **Lecturing hours:** 60  
**Study programme:** Bachelor in Economy, 2nd year  
**Centre:** Universidad Complutense de Madrid      **Year:** 2019/20  
**Language of Teaching:** Spanish
- **Course:** Statistics II      **ECTS credits:** 6      **Lecturing hours:** 40 (2/3 of shared course)  
**Study programme:** Bachelor in Business Administration, 2nd year  
**Centre:** Universidad Complutense de Madrid      **Year:** 2018/19  
**Language of Teaching:** English
- **Course:** Statistics II      **ECTS credits:** 6      **Lecturing hours:** 40 (2/3 of shared course)  
**Study programme:** Bachelor in Economy, 2nd year  
**Centre:** Universidad Complutense de Madrid      **Year:** 2018/19  
**Language of Teaching:** English
- **Course:** Numerical methods      **ECTS credits:** 4.5      **Lecturing hours:** 45  
**Study programme:** Master in Statistics  
**Centre:** Universidade Pedagógica do Moçambique      **Year:** 2017/18  
**Language of Teaching:** Portuguese  
**Detail:** Intensive Master course in Maputo (Moçambique)
- **Course:** Statistics II      **ECTS credits:** 6      **Lecturing hours:** 40 (2/3 of shared course)  
**Study programme:** Bachelor in Business Administration, 2nd year  
**Centre:** Universidad Complutense de Madrid      **Year:** 2017/18  
**Language of Teaching:** English  
**Evaluation by students:** 96.3/100
- **Course:** Statistics II      **ECTS credits:** 6  
**Lecturing hours:** 20 + 27 (1/3 each of shared course)  
**Study programme:** Bachelor in Economy, 2nd year  
**Centre:** Universidad Complutense de Madrid      **Year:** 2017/18

**Language of Teaching:** English/Spanish

- **Course:** Calculus II    **ECTS credits:** 6    **Lecturing hours:** 63  
**Study programme:** Bachelor in Industrial Engineering & Bachelor in Biomedical Engineering, 1st year  
**Centre:** Universidad Europea de Madrid    **Year:** 2016/17  
**Language of Teaching:** Spanish  
**Evaluation by students:** 3.94/5
- **Course:** Statistics    **ECTS credits:** 6    **Lecturing hours:** 63  
**Study programme:** Bachelor in Aeronautical Engineering, 2nd year  
**Centre:** Universidad Europea de Madrid    **Year:** 2016/17  
**Language of Teaching:** English  
**Detail:** hybrid course (50% online)  
**Evaluation by students:** 4.20/5
- **Course:** Statistics for Engineers    **ECTS credits:** 6    **Lecturing hours:** 64  
**Study programme:** Bachelor in Industrial Engineering, 1st year  
**Centre:** Universidad Europea de Madrid    **Year:** 2016/17  
**Language of Teaching:** English  
**Detail:** hybrid course (50% online)  
**Evaluation by students:** 4.07/5
- **Course:** Applied Mathematics for Architects    **ECTS credits:** 6    **Lecturing hours:** 77  
**Study programme:** International Bachelor in Foundations of Architecture, 1st year  
**Centre:** Universidad Europea de Madrid    **Year:** 2016/17  
**Language of Teaching:** English  
**Evaluation by students:** 4.75/5
- **Course:** Statistics & Optimization    **ECTS credits:** 6    **Lecturing hours:** 75  
**Study programme:** Bachelor in Informatics Engineering & Bachelor in Biomedical Engineering, 1st year  
**Centre:** Universidad Europea de Madrid    **Year:** 2016/17  
**Language of Teaching:** Spanish/English (Mixed)  
**Evaluation by students:** 4.38/5
- **Course:** Business Mathematics    **ECTS credits:** 6    **Lecturing hours:** 64  
**Study programme:** Global Bachelor in International Business, 1st year  
**Centre:** Universidad Europea de Madrid    **Year:** 2016/17  
**Language of Teaching:** English  
**Evaluation by students:** 4.14/5
- **Course:** Algebra    **ECTS credits:** 6    **Lecturing hours:** 75  
**Study programme:** Bachelor in Industrial Engineering, 1st year  
**Centre:** Universidad Europea de Madrid    **Year:** 2015/16  
**Language of Teaching:** Spanish  
**Evaluation by students:** 4.27/5
- **Course:** Statistics    **ECTS credits:** 6    **Lecturing hours:** 69  
**Study programme:** Study abroad in Engineering  
**Centre:** Universidad Europea de Madrid    **Year:** 2015/16  
**Language of Teaching:** English

**Detail:** International exchange group from ECE Paris

**Evaluation by students:** 4.82/5

- **Course:** Business Mathematics    **ECTS credits:** 6    **Lecturing hours:** 73  
**Study programme:** Global Bachelor in International Business & Marketing, 1st year  
**Centre:** Universidad Europea de Madrid    **Year:** 2015/16  
**Language of Teaching:** English  
**Evaluation by students:** 4.67/5
- **Course:** Business Mathematics    **ECTS credits:** 6    **Lecturing hours:** 72  
**Study programme:** Bachelor in Marketing and Business Creation and Direction, 1st year  
**Centre:** Universidad Europea de Madrid    **Year:** 2015/16  
**Language of Teaching:** Spanish  
**Evaluation by students:** 4.50/5
- **Course:** Algebra & Discrete Mathematics    **ECTS credits:** 6    **Lecturing hours:** 60  
**Study programme:** Informatics Engineering, 1st year  
**Centre:** Universidad Europea de Madrid    **Year:** 2015/16  
**Language of Teaching:** Spanish  
**Detail:** Professional adults ("HCAP")  
**Evaluation by students:** 4.78/5
- **Course:** Calculus    **ECTS credits:** 6    **Lecturing hours:** 57  
**Study programme:** Informatics Engineering, 1st year  
**Centre:** Universidad Europea de Madrid    **Year:** 2015/16  
**Language of Teaching:** Spanish  
**Detail:** Professional adults ("HCAP")  
**Evaluation by students:** 4.88/5
- **Course:** Numerical Analysis    **ECTS credits:** 6    **Lecturing hours:** 60  
**Study programme:** Bachelor in Telecommunication Technology Engineering, 3rd year  
**Centre:** Universidad Carlos III de Madrid    **Year:** 2014/15  
**Language of Teaching:** Spanish  
**Detail:** Course coordinator  
**Evaluation by students:** 4.33/5
- **Course:** Calculus    **ECTS credits:** 9    **Lecturing hours:** 90  
**Study programme:** Bachelor in Informatics Engineering, 1st year  
**Centre:** Universidad Carlos III de Madrid    **Year:** 2014/15  
**Language of Teaching:** Spanish  
**Detail:** 1 theory group (3 ECTS credits), 2 problem groups (2 × 3 ECTS credits)  
**Evaluation by students:** 4.29/5
- **Course:** Discrete Mathematics    **ECTS credits:** 6    **Lecturing hours:** 60  
**Study programme:** Bachelor in Informatics Engineering, 1st year  
**Centre:** Universidad Carlos III de Madrid    **Year:** 2013/14  
**Language of Teaching:** English    **Evaluation by students:** 3.88/5
- **Course:** Quantum Field Theory from Minkowski to Analogue Hawking Radiation  
**Centre:** University of Nice Sophia Antipolis    **Year:** May 2010    **Lecturing hours:** 10  
**Language of Teaching:** French

**Detail:** Intensive PhD-level course

## EDUCATIONAL INNOVATION

### A. Participation in Educational Innovation Projects

- EXPERIENTIAL LEARNING: FROM THE AULA TO EMPIRICAL PRACTICE. (PID 2019-302)  
**Period:** Academic year 2019/20  
**Funding Entity:** Universidad Complutense de Madrid (“Proyectos Innova Docencia”)  
**Figure:** Scientist in charge
- GAMIFICATION STRATEGIES APPLIED TO STATISTICAL METHODS IN THE LEARNING PROCESS OF TOURISM EDUCATION. (PIMCD 2018/301)  
**Period:** Academic year 2018/19  
**Funding Entity:** Universidad Complutense de Madrid (“Proyectos de Innovación y Mejora de la Calidad Docente”)  
**Figure:** Participant  
**Scientist in charge:** Prof. Jesús Barreal Pernas
- BIG DATA IN EDUCATION II: ADAPTIVE METHODOLOGIES IN THE TEACHING-LEARNING PROCESS BASED ON STUDENT DIAGNOSTICS. (PIMCD 2017/245)  
**Period:** Academic year 2017/18  
**Funding Entity:** Universidad Complutense de Madrid (“Proyectos de Innovación y Mejora de la Calidad Docente”)  
**Funding:** 1125€  
**Figure:** Participant  
**Scientist in charge:** Adolfo Hernández Estrada

### B. Publications

- LA NARRATIVA COMO HERRAMIENTA DOCENTE DENTRO DE LA GAMIFICACIÓN DE LA ESTADÍSTICA EN EL GRADO EN TURISMO (with J. Barreal Pernas); Digital Education Review 36, 152-170 (2019)  
Journal indexed in SJR - Area: Education (Q2)

### C. Seminars and presentations in congresses

- “Proposal of Gamification project applied to statistical methods in the Bachelor’s Degree of Tourism”  
Oral contribution, XXth Congress AECIT (Spanish Association of Scientific Experts in Tourism), Roquetas del Mar (Spain), 21-23/11/2018
- “Gamification applied to statistical methods in tourism education”  
Oral contribution, Gamification workshop, Faculty of Economics, UCM (06/11/2018)

## SELECTED STAYS IN CENTRES OTHER THAN THE APPLICANT’S INSTITUTION

- UNIVERSIDADE PEDAGÓGICA (MAPUTO, MOÇAMBIQUE)  
**Year:** 2018     **Period:** 3 weeks  
**Objective:** Teaching of “Numerical methods” module in Master of Statistics programme  
**Funding:** Universidad Complutense de Madrid mobility grant
- LOW TEMPERATURE LABORATORY, AALTO UNIVERSITY (HELSINKI, FINLAND)

- Year:** 2010-2012      **Period:** 22 months  
**Objective:** Postdoctoral Research Contract  
**Funding:** Aalto University & Spanish Ministry for Economy and Competitivity (MEC)
- LABORATOIRE J.A. DIEUDONNÉ, UNIVERSITÉ DE NICE SOPHIA ANTIPOLIS (FRANCE)  
**Year:** 2010      **Period:** 9 months  
**Objective:** Postdoctoral Research Contract  
**Funding:** CNRS (Centre National de la Recherche Scientifique)
  - VICTORIA UNIVERSITY OF WELLINGTON (WELLINGTON, NEW ZEALAND)  
**Year:** 2009      **Period:** 5 weeks  
**Objective:** Collaboration with prof. Matt Visser  
**Funding:** CSIC (I3P)
  - TKK - HELSINKI UNIVERSITY OF TECHNOLOGY (HELSINKI, FINLAND)  
**Year:** 2008      **Period:** 1 month  
**Objective:** Collaboration with prof. Grigory E. Volovik  
**Funding:** CSIC (I3P)
  - SISSA – INTERNATIONAL SCHOOL FOR ADVANCED STUDIES (TRIESTE, ITALY)  
**Year:** 2008      **Period:** 1 month  
**Objective:** Collaboration with prof. Stefano Liberati  
**Funding:** CSIC (I3P)
  - UNIVERSIDAD COMPLUTENSE DE MADRID  
**Year:** 2003-2004      **Period:** 10 months  
**Objective:** Erasmus/Socrates Exchange
  - UNIVERSIDAD POLITÉCNICA DE MADRID  
**Year:** 1999      **Period:** 6 months  
**Objective:** Research for M.Sc. thesis (see above)

**LANGUAGES** – N=Native, P=Perfect, F=Fluent, B=Basic

Language	Spoken	Read	Written
Dutch	N	N	N
French	N	N	N
English	P	P	P
Spanish	P	P	P
Portuguese	F	F	B
Italian	F	F	B
German	B	F	–
Finnish	B	B	–

#### **NON-ACADEMIC PROFESSIONAL EXPERIENCE**

- **PROJECT MANAGER**  
**Period:** May 2001 – Apr 2002      **Company:** Alcatel (Antwerp, Belgium)  
**Description:** Global pre-sales responsible for “next-generation” telecommunication networks: reception and evaluation of the requests, network design, detailed technical offer, cost and revenue estimation, global presentation and defence to customer.  
**Region of responsibility:** EMEA (Europe, Middle-East, Africa)
- **TECHNOLOGY CONSULTANT**  
**Period:** May 2000 – Apr 2001      **Company:** Alcatel (Antwerp, Belgium)

**Description:** Expert in data networks based on ATM and IP technology, detailed knowledge of associated products (switches & routers), preparation of technical documents, technical support for tenders.

**Region of responsibility:** EMEA (Europe, Middle-East, Africa)

## **OTHER MERITS**

### • **Prizes and awards**

- 4th prize from FQXi Foundation (Foundational Questions in Physics and Cosmology Institute) in essay contest on “The Nature of Time” (2008)  
see <http://fqxi.org/community/essay/winners/2008.1#Jannes>

### • **Refereeing**

- referee for Phys. Rev. D and Phys. Rev. Lett.
- occasional referee for Sigma, J. Low Temp. Phys., Found. Phys., Universe and Gen. Rel. & Grav.

### • **Evaluation committees**

- PhD thesis jury, Vocal member. Universidad de Granada, PhD in physics.  
Luis Cortés Barbado, “Perception of Hawking and Unruh radiation by different observers: applications of the effective temperature function”, 04/2014
- PhD thesis jury, Vocal member. Universidad Complutense de Madrid, PhD in physics.  
Beatriz Elizaga de Navascués, “Loop quantum cosmology and fermionic fields”, 06/2017

- **Popularisation of science and outreach (selected conferences)**

- (1) *"Stellar evolution and black holes"*  
Public conference for "Semana de la ciencia" (week of science), Madrid (11/2017 and 11/2018)
- (2) *"Stellar evolution & black holes"*  
Invited conference, Universidad Europea de Madrid, *Madrid (Spain)*, 10/10/2018.
- (3) *"The life and death of stars"*  
Popular science class taught to grade primary school children, Madrid (2013–2017)
- (4) *"Perspectives on quantum gravity"*  
Public conference for "Semana de la ciencia" (week of science), Madrid (11/2009 and 11/2016)
- (5) *"Origin of time: relativity vs emergence"*  
Public conference for "Semana de la ciencia" (week of science), Madrid (11/2015)
- (6) *"Dreams of Unification"*  
Public conference for "Primavera Cinemística 2015: El año de la luz" (Cinemystic Spring 2015: the year of light), Granada (06/2015)
- (7) *"Emergent time"*  
Public conference for "II Ciclo de Filocosmología: Tiempo al tiempo" (2nd cycle of Philocosmology – Philosophy meets Cosmology: Time for time), Madrid (05/2014)

- **Highlights in scientific and general press**

- D. Shiga, *"Kitchen sink experiment simulates exotic white holes"*, *New Scientist* 2783 (2010).  
Hydrodynamic white-hole experiment also covered in *Wired Science*; *MIT Technology Review*; *Mad Science*; *Softpedia* as well as in, amongst others, Danish, Dutch, French, Hungarian, Italian, Japanese, Persian, Russian, Spanish.
- A. Alonso-Serrano & G. Jannes, *Universe* 5 (2019): selected for *Universe* front page
- Highlight in *"Revista Española de Física"* (Spanish Journal of Physics), oct-dec 2019, about the same article with A. Alonso-Serrano on the multiverse
- C. García Meca, C. Barceló, S. Carloni, GJ, J. Sánchez Dehesa & A. Martínez, *PRB* 90 (2014): selected for *Phys. Rev. B* front page
- *"¡No tenemos tiempo!"* (We don't have time!), *Gente Digital* (Spanish online newspaper), 24/05/2009 – see link (about FQXi essay)