

# Alex Vañó-Viñuales

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## Personal data

- **Current position:** Postdoctoral researcher at GRIT, CENTRA, IST, University of Lisbon; IST-ID, Avenida António José de Almeida 12, 1000-043 Lisboa
- **Date and place of birth:** 31st January 1987, Palma de Mallorca, Spain
- **Nationality:** Spanish, **Marital status:** single
- **ORCID:** 0000-0002-8589-006X, **ResearcherID:** E-9612-2016, **CiênciaID:** 861D-47A9-1768

## Academic formation

- **PhD in Physics:** 18th September 2015
  - **University of the Balearic Islands, UIB**, 2011-2015  
PhD thesis: “Free evolution of the hyperboloidal initial value problem in spherical symmetry”, supervised by Sascha Husa.
- **Master in Physics:** 23rd June 2011.
  - **University of the Balearic Islands, UIB**, 2010-2011  
Master thesis: “Numerical evolution of the Einstein equations in spherical symmetry: the GBSSN equations and conformal compactification”, supervised by Sascha Husa.
- **Degree in Physics**
  - **University of the Balearic Islands, UIB**, 2005-2008, 2009-2010  
Physics degree: 22nd September 2010 (average qualification: 3.39 (of 4) or 9.36 (of 10)).
  - **Friedrich-Schiller-Universität Jena, FSU**, 2008-2009  
4th year of the Physics degree in this university as an Erasmus exchange student.

## Research stays

- **Kyoto University, Kyoto, Japan**  
Period of time: 01/05/2023 - 31/05/2023  
Research topics: Numerical relativity, hyperboloidal initial data including matter  
Visiting: Koutarou Kyutoku
- **Perimeter Institute for Theoretical Physics, Waterloo, Ontario, Canada**  
Period of time: 01/08/2022 - 30/08/2022  
Research topics: Numerical relativity, hyperboloidal evolutions  
Visiting: Erik Schnetter

- **IUCAA, Inter-University Centre for Astronomy and Astrophysics, Pune, India**  
 Period of time: 26/10/2017 - 17/11/2017  
 Research topics: Numerical relativity, evolutions of a massive scalar field  
 Invited by: Sanjeev Dhurandhar
- **FaMAF, Universidad Nacional de Córdoba, Córdoba, Argentina**  
 Period of time: 01/07/2014 - 31/08/2014  
 Research topic: Massless scalar field evolution on extreme Reissner-Nordström background  
 Advisor: Sergio Dain
- **Erwin Schrödinger Institute (ESI), Universität Wien, Vienna, Austria**  
 Period of time: 25/07/2011 - 19/08/2011  
 Research topic: Participation in the workshop “Dynamics of General Relativity”  
 Advisor: Sascha Husa
- **Universität Wien, Vienna, Austria**  
 Period of time: 01/07/2010 - 20/09/2010, summer 2010  
 Research topic: Spherical BSSN formulation on the Einstein equations (General Relativity)  
 Advisors: Mark Hannam and Sascha Husa
- **GSI (Helmholtzzentrum für Schwerionenforschung) - Darmstadt, Germany**  
 Period of time: 03/08/2009 - 25/09/2009, summer student programme 2009  
 Research topic: Particle physics experiment (Cherenkov effect)  
 Advisor: Carsten Schwarz  
 Student report: “Test of a DIRC prototype in a relativistic proton beam”
- **DESY (Deutsches Elektronen Synchrotron) - Zeuthen, Berlin, Germany**  
 Period of time: 23/07/2008 - 16/09/2008, summer student programme 2008  
 Research topic: Particle physics analysis (Higgs-strahlung process)  
 Advisors: Martin Ohlerich and Wolfgang Lohmann  
 Student report: “Spin measurement of recoiled particles in the Higgs-strahlung process”

## Contributions to scientific conferences and seminars

- **15th Edoardo Amaldi Conference on Gravitational Waves**, 17th - 21st July 2023, online  
 Poster: “Current 3D numerical efforts in hyperboloidal conformal evolutions”
- **Infinity on a Gridshell**, hyperboloidal meeting, 10th - 13th July 2023, Niels Bohr Institute, Copenhagen, Denmark. Invited talk: “Status of 3D free hyperboloidal conformal numerical evolutions”
- **Seminar given at Rikkyo University**, 8th June 2023, Tokyo, Japan.  
 Title: “Free hyperboloidal numerical evolutions”
- **Seminar given at Yukawa Institute for Theoretical Physics**, 11th May 2023, Kyoto University, Japan. “Current efforts on free hyperboloidal numerical evolutions”
- **Seminar given to Academia Sinica, Taipei, Taiwan**, 17th February 2023, online. “Two approaches to (3D) free hyperboloidal evolution”

- **Talk given at the monthly Numerical Relativity community call**, 6th February 2023, online. Title: “Current status of 3D free hyperboloidal evolution”
- **XV Black Holes Workshop**, 19th - 20th December 2022, ISCTE, Lisbon, Portugal. Talk: “Causal visualization of collapsing hyperboloidal slices”
- **General Relativity Seminar given at TPI, FSU Jena, Germany**, 30th November 2022. “Towards 3D free hyperboloidal evolution”
- **Seminar given to GRIT, CENTRA, IST, University of Lisbon**, 10th November 2022. “Current efforts towards 3D free hyperboloidal evolution” [https://youtu.be/StpF8\\_1h5CA](https://youtu.be/StpF8_1h5CA)
- **Seminar given to the Astrophysical and Cosmological Relativity division at the Albert Einstein Institute**, 21st September 2022, Golm, Germany. Title: “Current efforts on free hyperboloidal evolution”
- **European Einstein Toolkit meeting 2022**, 29th August - 2nd September 2022, University College Dublin, Ireland. Invited talk: “Free hyperboloidal numerical evolutions”
- **Seminar given to the Strong Gravity group at Perimeter Institute**, 24th August 2022, Waterloo, Canada. Title: “Free hyperboloidal evolution”
- **Frontiers in Numerical Relativity 2022 (FNR2022)**, 25th - 29th July 2022, Jena, Germany. Talk: “Free hyperboloidal evolution using conformal compactification”
- **New frontiers in strong gravity**, 3rd - 16th July 2022, Benasque, Spain. Invited talk: “Free hyperboloidal evolution”
- **Seminar given at a group meeting of the Gravity Group of The University of Mississippi**, 28th June 2022, online. Title: “Current numerical efforts on free hyperboloidal evolution”
- **Seminar given to the Gravity Exploration Institute at Cardiff University**, 16th June 2022, Cardiff, UK and online. Title: “Current efforts on free hyperboloidal evolution”
- **Higgs Lecture & Workshop 2022**, 13th - 14th June 2022, King’s College London, UK. Invited talk: “Gravitational waves: from Einstein to infinity”
- **Seminar given to the Theoretical Astrophysics section at the Univ. of Tübingen**, 18th March 2022, Tübingen, Germany. Title: “Current efforts on free evolution of the hyperboloidal initial value problem”
- **XIV Black Holes Workshop**, 20th - 21st December 2021, Aveiro, Portugal. Talk: “Hyperboloidal trumpet black hole slices and their causal visualization”
- **Spanish-Portuguese Relativity Meeting (EREP) 2021**, 13th - 16th September 2021, online (Aveiro, Portugal). Talk: “Hyperboloidal massless scalar field in 3D”
- **Global meeting of the GWverse COST action**, 30th August - 3rd September 2021, Lisbon, Portugal, and online. Talk: “Hyperboloidal evolutions of the wave equation in 3D”
- **North American Einstein Toolkit School 2021**, 26th - 30th July 2021, online (University of Illinois Urbana Champaign, USA). Lightning talk: “Hyperboloidal wave equation in 3D”
- **XIII Black Holes Workshop**, 21st - 22nd December 2020, online (IST, Lisbon, Portugal). Talk: “Penrose diagrams for visualising black hole hyperboloidal slices”
- **ICERM Workshop 2**, 5th - 9th October 2020, online (Brown University, Providence, USA). Lightning talk: “Free evolution on hyperboloidal slices with conformal compactification”

- **XII Black Holes Workshop**, 19th - 20th December 2019, Universidade do Minho, Guimarães, Portugal. Talk: “Hyperboloidal slices of black hole spacetimes in spherical symmetry”
- **European Einstein Toolkit Meeting 2019**, 2nd - 6th September 2019, King’s College London, UK.  
Invited talk: “Free evolution on hyperboloidal slices: spherical symmetry and extension plans”
- **GR22 & Amaldi 13**, 7th - 12th July 2019, Valencia, Spain. Talk: “Reaching Infinity: Free Hyperboloidal Evolution Using Conformal Methods In Spherical Symmetry”
- **Seminar given to GRIT, CENTRA, IST, University of Lisbon**, 28th February 2019.  
“Reaching infinity: free hyperboloidal evolution using conformal methods in spherical symmetry”
- **Numerical Relativity beyond General Relativity**, 3rd - 9th June 2018, Benasque, Spain.  
Talk: “Reaching infinity in numerical simulations”
- **27th Workshop on General Relativity and Gravitation in Japan (JGRG27)**, 27th November - 1st December 2017, Saijo, Higashi-hiroshima, Japan. Talk: “Free hyperboloidal evolution in spherical symmetry”
- **Lecture series on “The hyperboloidal initial value problem in numerical relativity”**, imparted by AVV and David Hilditch at IUCAA (Inter-University Centre for Astronomy and Astrophysics), 30th October - 13th November 2017, IUCAA, Pune, India. Lectures by AVV:
  - Talk I: Numerical relativity evolutions of black hole binaries (30th October 2017)
  - Talk III: Concepts in the hyperboloidal initial value problem (6th November 2017)
  - Talk IV: Hyperboloidal numerical evolution in spherical symmetry (8th November 2017)
- **Colloquium given at IUCAA**, 2nd November 2017, IUCAA, Pune, India.  
Title: “Numerical Relativity in the Era of Gravitational Wave Astronomy”
- **The Physics of Extreme Gravity Stars**, 5th - 30th June 2017, Nordita, Stockholm, Sweden.  
Talk: “Free hyperboloidal evolution: results in spherical symmetry”
- **Spanish-Portuguese Relativity Meeting (EREP) 2016**, 12th - 15th September 2016, Lisbon, Portugal. Talk: “Going beyond Bowen-York binary black hole initial data”
- **Workshop on Numerical and Mathematical Relativity 2016**, 8th - 10th September 2016, Oppurg, Germany. Invited talk: “Free evolution of the hyperboloidal initial value problem in spherical symmetry”
- **21st International Conference on General Relativity and Gravitation (GR21)**, 10th - 15th July 2016, Columbia University, New York, USA. Talk: “Free hyperboloidal evolution of strong field initial data in spherical symmetry”
- **BritGrav16**, 4th-5th April 2016, Nottingham, UK, Talk: “Free hyperboloidal evolution in spherical symmetry”
- **Seminar given to the Gravitational Physics Group at Cardiff University**, 16th October 2015, Cardiff, United Kingdom. Title: “Free hyperboloidal evolution in spherical symmetry”
- **14th Marcel Grossmann Meeting**, 12th - 18th July, 2015, University of Rome “La Sapienza”, Roma, Italy. Talk: “Free Hyperboloidal Evolution In Spherical Symmetry”
- **Spanish Relativity Meeting (ERE) 2015**, 7th - 11th September 2015, Mallorca, Spain  
Talk: “Free hyperboloidal evolution in spherical symmetry”

- **Spanish Relativity Meeting (ERE) 2014**, 1st - 5th September 2014, Valencia, Spain  
Talk: “Unconstrained hyperboloidal evolution of strong field initial data in spherical symmetry”
- **Seminar given to the Relativity Group of the Universidad Nacional de Córdoba**, 10th July 2014, Córdoba, Argentina. “Unconstrained hyperboloidal evolution in spherical symmetry”
- **NRDA 2013**, 18th - 21st September 2013, Club Pollentia Resort, Mallorca, Spain  
Talk: “Spherical symmetry as a test case for unconstrained hyperboloidal evolution”
- **Spanish Relativity Meeting (ERE) 2013**, 8th - 13th September 2013, Benasque, Spain  
Talk: “Spherical symmetry as a test case for unconstrained hyperboloidal evolution”
- **GR20 & Amaldi 10**, 7th - 13th July 2013, University of Warsaw, Poland  
Poster: “Surfing BSSN and Z4 to null infinity (Spherical symmetry as a test case for unconstrained hyperboloidal evolution)”

## Other scientific conferences, seminars and courses attended

- **North American Einstein Toolkit Workshop 2023**, 17th - 21st July 2023, Rochester Institute of Technology, USA, and online.
- **TCAN on BNS and BH/NS Workshop 2022**, 20th - 24th June 2022, online (Rochester Institute of Technology).
- **At the Interface of Mathematical Relativity and Astrophysics (22w5025), BIRS**, 24th - 29th April 2022, Banff, Alberta, Canada and online.
- **12th Central European Relativity Seminar (CERS)**, 21st - 23rd February 2022, Budapest, Hungary and online.
- **Yukawa International Seminar 2022a: Gravity - The Next Generation**, 14th - 18th February 2022, Yukawa Institute for Theoretical Physics, Kyoto University, Japan and online.
- **JGRG Workshop 2021**, 6th - 10th December 2021, online (Waseda Univ., Tokyo, Japan).
- **Mathematical and Computational Challenges in the Era of Gravitational Wave Astronomy**, IPAM long term program, 13th September - 17th December 2021, UCLA, USA, (online participation).
  - Workshop I: Computational Challenges in Multi-Messenger Astrophysics, 4th - 8th October
  - Workshop II: Mathematical and Numerical Aspects of Gravitation, 25th - 29th October
- **Current challenges in gravitational physics workshop**, 21st - 28th April 2021, online (SISSA, Trieste, Italy).
- **Science at the Horizon: the Next-Generation EHT**, 22th - 26th February 2021, online (Harvard University).
- **11th Central European Relativity Seminar**, 11th - 13th February 2021, online (Vienna, Austria).
- **JGRG Workshop 2020**, 23rd - 27th November 2020, online (Nagoya, Japan).
- **Iberian Gravitational Wave Meeting 2020 (IGWM2020)**, 19th - 20th October 2020, online (Barcelona, Spain).

- **Advances in Computational Relativity**, ICERM long term program, 9th September - 11th December 2020, Brown University, Providence, USA, (online participation).
  - Workshop 1: Advances and Challenges in Computational Relativity, 14th - 18th September
  - Workshop 2: Mathematical and Computational Approaches for Solving the Source- Free Einstein Field Equations, 5th - 9th October
  - Workshop 3: Mathematical and Computational Approaches for the Einstein Field Equations with Matter Fields 26th - 30th October
- **Testing General Relativity using Gravitational Waves**, 13th - 14th August 2020, online (IACS and IITGN, India).
- **BHPToolkit Spring 2020 workshop**, 25th - 27th May 2020, online (Prague, Czechia).
- **LIGO and Virgo’s Waveform face-to-face meeting**, 30th October - 1st November 2018, Club Pollentia Resort, Mallorca, Spain
- **Colliding Stars and Black Holes: Gravity Exploration at Cardiff**, 29th - 30th May 2018, Cardiff University, Cardiff, United Kingdom
- **Niall Fest 2018**, 24th - 26th May 2018, University College Cork, Cork, Ireland
- **LIGO and Virgo’s Waveform face-to-face meeting**, 17th - 19th October 2017, Harnack Haus Berlin, Berlin, Germany
- **3rd Iberian Gravitational-Wave Meeting**, 20th - 22nd March 2013, Valencia, Spain  
Organization: Department of Astronomy and Astrophysics, University of Valencia
- **CoCoNut Meeting 2012**, 24th - 26th October 2012, UIB, Palma de Mallorca, Spain  
Organization: Relativity and Cosmology Group of the University of the Balearic Islands
- **Workshop on Numerical and Mathematical Relativity 2012**, 11th - 13th October 2012, Oppurg, Germany. Organization: TPI Friedrich-Schiller-Universität Jena
- **Rattle and Shine: Gravitational Wave and Electromagnetic Studies of Compact Binary Mergers**, 30th July - 3rd August 2012, KITP, Santa Barbara, United States
- **SIGRAV Graduate School - X Edition: “Astrophysical Black Holes”**, 21st - 26th May 2012, Villa Olmo, Como, Italy
- **Spring Einstein Toolkit Workshop 2012**, 3rd - 6th April 2012, Georgia Tech, Atlanta, United States
- **2nd Iberian Gravitational Wave Meeting**, 15th - 17th February 2012, Barcelona, Spain  
Organization: Gravitational Wave Astronomy - LISA Group of the CSIC-IEEC
- **PRACE Winter School: Hybrid programming on Massively Parallel Architectures**, 6th - 10th February 2012, CINECA Supercomputing Center, Bologna, Italy
- **IMPRSS Lecture Week No.3**, 30th October - 4th November 2011, Palma de Mallorca, Spain  
Organization: International Max Planck Research School on Gravitational Wave Astronomy  
Participation: contribution to project “ET@home”
- **Astro-GR@Mallorca 2011**, 5th - 9th September 2011, UIB, Palma de Mallorca, Spain  
Organization: Albert Einstein Institute and Relativity Group of UIB

- **Dynamics of General Relativity Programme**, 25th July - 14th August 2011, ESI, Universität Wien, Vienna, Austria
- **Amaldi 9 & NRDA 2011**, 10th - 15th July 2011, Cardiff University, Cardiff, United Kingdom
- **Advances and Challenges in Computational General Relativity**, 20th - 22nd May 2011, Brown University, Providence, United States
- **4th Multidark Consolider Workshop**, 4th - 6th April 2011, IFT-UAM/CSIC, Madrid, Spain  
Organization: Consolider-Ingenio 2010 project “MultiDark”
- **Iberian Gravitational Waves Meeting 2011**, 2nd - 4th February 2011, UIB, Spain  
Organization: Relativity and Cosmology Group of the University of the Balearic Islands
- **Summer University Strasbourg 2008**, 29th June - 5th July 2008  
Institution: UFR de Sciences Physiques, Université Louis Pasteur, Strasbourg, France

## Supervision of students

- **Master students:** Pedro Baptista and João Dinis Álvares, Instituto Superior Técnico (IST), University of Lisbon, Portugal, 2023 - 2024
- **Bachelor students:** Tiago Valente and Miguel Parreira, Instituto Superior Técnico (IST), University of Lisbon, Portugal, 2023
- **PhD student:** Christian Peterson Bórquez, Instituto Superior Técnico (IST), University of Lisbon, Portugal, 2021 – present, co-supervision
- **Master student:** Inês Andrade Rainho, Instituto Superior Técnico (IST), University of Lisbon, Portugal, 2021 – 2022, co-supervision
- **PhD student:** Shalabh Gautam, Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, India, 2017-2021, co-supervision

## Panels

- Internal examiner at the **PhD defence** of Isabel Suárez Fernández, 15th July 2022.

## Teaching

- **Minicourse “The Wave Equation on Curved Spacetimes”**, 11th School on Astrophysics and Gravitation, 1st - 6th September 2023, CENTRA, IST, University of Lisbon, Portugal.
- **“Introduction to Numerical Relativity” PhD course**, autumn semesters 2021 and 2022, Instituto Superior Técnico, University of Lisbon, Portugal.
- **“Introduction to Numerical Relativity” module** for the course “Advanced Topics in Computational Physics”, autumn semester 2020 and spring semester 2023 (together with David Hilditch), Instituto Superior Técnico, University of Lisbon.
- **Co-teaching of course** “Advanced General Relativity and Gravitational Waves” together with Bernard Schutz, spring semester 2019, Cardiff University, UK.
- **General Relativity exercise classes**, spring semester 2011-2012, University of the Balearic Islands, Spain.

## Event organization

- **European Einstein Toolkit Workshop 2023**, 19th-23th June 2023, University of Aveiro, Portugal, <https://euet2023.web.ua.pt/>, part of the Scientific Organising Committee
- **Infinity on a Gridshell** (meeting on hyperboloidal topics), 10th-13th July 2023, Niels Bohr Institute, University of Copenhagen, Denmark, <https://hyperboloid.al/event/copenhagen-23/>, part of the SOC

## Outreach activities and talks

- Outreach article *Exploring strong gravity with GRIT*, Richard Brito, Vitor Cardoso, Francisco Duque, Edgar Gasperín, David Hilditch, Guilherme Raposo, and Alex Vãno-Viñuales, in Revista Técnica 505 Edition, aeist (March 2023).
- Member of the jury in outreach event “Es Nostro Cel” <https://es-nostro-cel.com/> (November 2022).
- CENTRA answers outreach video 13: *What is escape velocity?* [https://www.youtube.com/watch?v=tM\\_7zIVS2hk](https://www.youtube.com/watch?v=tM_7zIVS2hk) (June 2022).
- Storytelling training by Christine Watkins organised by IOP, Cardiff, UK (Oct 2017)
- Invited guest to the Award Ceremony of the “Premio Princesa de Asturias 2017”, with Research Prize awarded to Weiss, Thorne, Barish and LIGO Scientific Collaboration, Oviedo, Spain (Oct 2017)
- Review of the book *Ripples in Spacetime* by Govert Schilling: *Welcome to a new era in astronomy*, Nature Astronomy 1, 647 (2017), DOI:10.1038/s41550-017-0240-z
- Invited talk at the **UKSEDS National Student Space Conference 2017**, 4-5 March 2017, University of Exeter, United Kingdom. Title: “LIGO and the discovery of gravitational waves”
- Appearance on the outreach video LIGO: past present and future by Physics World: <https://www.youtube.com/watch?v=NUZBi2xQ9cE> (October 2017).
- Translation to Spanish of the gravitational wave related game “Black Hole Hunter”.
- Organization of a stand with the Black Hole Hunter game at the Einstein’s Legacy Meeting, 28-29 November 2015, Queen Mary University, London, United Kingdom.
- Organization of a stand about gravitational waves in the Street Alicante Science (StAS) fair, May 2012, Alicante, Spain.
- Organization of a stand with gravitational wave related games and posters in the Faculty of Science of the University of the Balearic Islands, Palma de Mallorca, Spain.
- Translation to Catalan of the gravitational wave related game “Space Time Quest”.
- Questions for the Graviquiz of the outreach webpage “La Sinfonía del Universo”.
- Writing of several press releases about science topics in the local newspapers.

## Other activities

- Panelist at **Equality, diversity and inclusion in gravity** discussion round at meeting **At the Interface of Mathematical Relativity and Astrophysics (22w5025)**, BIRS, 24th - 29th April 2022, Banff, Alberta, Canada and online.



## Funding

- **FCT postdoctoral contract**  
01/03/2019 - 28/02/2025, with FCT (Fundação para a Ciência e a Tecnologia)  
Application centre: GRIT, CENTRA, IST, University of Lisbon, Portugal
- **Contract as Postdoctoral Research Associate**  
01/10/2015 - 01/03/2019, with Cardiff University  
Application centre: Gravitational Physics Group, Cardiff University, United Kingdom
- **PhD grant: Formación del Profesorado Universitario (FPU)**  
15/12/2011 - 30/09/2015, by the (Spanish) Ministry of Education  
Application center: Universitat de les Illes Balears, Palma de Mallorca, Spain
- **Predoctoral contract in the MultiDark Project, Consolider-Ingenio 2010**  
20/12/2010 - 14/12/2011, by the Instituto de Física Teórica IFT-UAM/CSIC, Madrid, Spain  
Application center: Univ. Autónoma de Madrid, transferred to Univ. de les Illes Balears
- **Undergraduate students' collaborative research grant**  
01/12/2009 - 31/06/2010, by the (Spanish) Ministry of Education  
Application center: Universitat de les Illes Balears, Palma de Mallorca, Spain
- **Undergraduate students' exchange grant, Erasmus Programme**  
01/09/2008 - 31/07/2009, by the European Commission  
Application center: Friedrich-Schiller-Universität Jena, Germany

## Membership of collaborations and scientific societies

- **Member of EuCAPT** (The European Consortium for Astroparticle Theory) (October 2022 - present).
- **Member of the Einstein Telescope Collaboration** (May 2022 - present).
- **Member of the LISA Consortium** (May 2022 - present).
- **Member of the LIGO Scientific Collaboration** (March 2010 - April 2019).
- **Member of the Spanish Royal Physics Society (RSEF)**, Complutense University of Madrid, Spain (Sept 2005 - present).
- In COST Action CA16104's research network **"GWverse"**, member of Working Group 2, 2021.

## Other merits

- **Invited professor** at Instituto Superior Técnico, University of Lisbon, Sept 2021 - Aug 2024.
- **Guest editor for journal Springer Nature** for the collection *Hyperboloidal foliations in the era of gravitational-wave astronomy: from mathematical relativity to astrophysics*, 2024.
- **Reviewer for journal Physical Review D (APS)** since November 2022.
- **Reviewer for journal Classical and Quantum Gravity (IOP)** since October 2019.

- **Seminar organiser** for CENTRA, IST, University of Lisbon, Sept 2021 - July 2023.
- **Seminar organiser** for the Gravitational Physics group at Cardiff University, Sept 2016 - June 2017.
- **Honorable mention** of the 2015 GWIC and Braccini Thesis Prizes
- **Degree Outstanding Award** (“**Premi Extraordinari de Llicenciatura**”) (January 2011)
- **High School Outstanding Award** (“**Premi Extraordinari de Batxillerat**”) (July 2005)
- **Physics Olympiad 2005:**
  - National Phase in Spain: Gold Medal (8th position)
  - Ibero-American Phase in Uruguay: Gold Medal (3rd position)
- **Chemistry Olympiad 2005:** National Phase in Spain: Gold Medal (9th position)

## Skills

- **Languages:** Spanish (native), Catalan (native), German (advanced), English (advanced), French (advanced), Japanese (intermediate), Chinese (intermediate), Portuguese (intermediate) and Welsh (basic).

Obtained certifications:

- **Certificate in Advanced English by the University of Cambridge** (March 2007)
- **Certificate in German as a Foreign Language** (“**Zertifikat Deutsch als Fremdsprache**”) **by the Goethe-Institut** (January 1999)
- **Chinese Proficiency Test (HSK) 4 (Intermediate)** (汉语水平考试四级) (May 2015)
- **Japanese-Language Proficiency Test N3 (Intermediate)** (日本語能力試験N3) (December 2013)
- **Foundation Level Certificate in Welsh Second Language: The Use of Welsh (Sylfaen)** (June 2017)
- **Official School of Languages of Palma de Mallorca (EOI):**
  - \* Certificate in the Advanced Level of: French (2010), English (2006) and German (2004)
  - \* Certificate in the Intermediate Level of: Chinese (2015)
- **Computing:**
  - **Operating systems:** Linux, Mac, Windows.
  - **Programming:** Fortran, C/C++, Python, PETSc, ROOT, OpenMP, MPI.
  - **Experience with other software:** Mathematica, Matlab, LaTeX, Microsoft Office (Excel, Word, PowerPoint), SVN, Git, Photoshop, AutoCAD.
  - **User of supercomputing centers:** MareNostrum (Barcelona).

## Publications

On the hyperboloidal initial value problem:

- *Spherical symmetry as a test case for unconstrained hyperboloidal evolution*, A. Vañó-Viñuales, S. Husa and D. Hilditch, 2014, Class.Quant.Grav. 32 (2015) 175010, DOI: 10.1088/0264-9381/32/17/175010, preprint: arXiv:1412.3827 [gr-qc].

- *Spherical symmetry as a test case for unconstrained hyperboloidal evolution II: gauge conditions*, A. Vañó-Viñuales and S. Husa, 2017, Class.Quant.Grav. 35 (2018) no.4, 045014, DOI: 10.1088/1361-6382/aaa4e, preprint: arXiv:1705.06298 [gr-qc].
- *Unconstrained hyperboloidal evolution of black holes in spherical symmetry with GBSSN and Z4c*, A. Vañó-Viñuales and S. Husa, ERE 2014 proceedings paper, Journal of Physics: Conference Series (JPCS) 600 (2015) 1, 012061, DOI: 10.1088/1742-6596/600/1/012061, preprint: arXiv:1412.4801 [gr-qc].
- *Free hyperboloidal evolution in spherical symmetry*, A. Vañó-Viñuales and S. Husa, in 14th Marcel Grossmann Meeting proceedings: C15-07-12, p.2025-2030, DOI: 10.1142/9789813226609\_0220, preprint: arXiv:1601.04079 [gr-qc].
- *The Hyperboloidal Numerical Evolution of a Good-Bad-Ugly Wave Equation*, E. Gasperin, S. Gautam, D. Hilditch and A. Vañó-Viñuales, 2019, Class.Quant.Grav. 37 (2020) 3 035006, DOI: 10.1088/1361-6382/ab5f21, preprint: arXiv:1909.11749 [gr-qc]
- *Summation by Parts and Truncation Error Matching on Hyperboloidal Slices*, S. Gautam, A. Vañó-Viñuales, D. Hilditch and S. Bose, 2021, Phys.Rev.D 103, 084045, DOI: 10.1103/PhysRevD.103.084045, preprint: arXiv:2101.05038 [gr-qc]
- *3D Evolution of a Good-Bad-Ugly-F Model on Compactified Hyperboloidal Slices*, Christian Peterson, Shalabh Gautam, Inês Rainho, Alex Vañó-Viñuales and David Hilditch, 2023, Phys.Rev.D 108, 024067, DOI: 10.1103/PhysRevD.108.024067, preprint: 2303.16190 [gr-qc]
- *Spherically symmetric black hole spacetimes on hyperboloidal slices*, Alex Vañó-Viñuales, 2023, Frontiers in Applied Mathematics and Statistics, Statistical and Computational Physics, Volume 9, DOI: 10.3389/fams.2023.12060172023, pre-print: 2304.05384 [gr-qc]

With the LIGO Scientific and Virgo Collaborations:

- *Properties of the Binary Black Hole Merger GW150914*, LIGO Scientific and Virgo Collaborations, Phys.Rev.Lett. 116 (2016) no.24, 241102, DOI: 10.1103/PhysRevLett.116.241102, preprint: arXiv:1602.03840 [gr-qc]
- *Improved Analysis of GW150914 Using a Fully Spin-Precessing Waveform Model*, LIGO Scientific and Virgo Collaborations, 2016, Phys.Rev. X6 (2016) no.4, 041014, DOI: 10.1103/PhysRevX.6.041014, preprint: arXiv:1606.01210 [gr-qc]
- *Directly comparing GW150914 with numerical solutions of Einstein's equations for binary black hole coalescence*, LIGO Scientific and Virgo Collaborations, 2016, Phys.Rev.D 94 (2016) 6, 064035, DOI: 10.1103/PhysRevD.94.064035, preprint: arXiv:1606.01262 [gr-qc]
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