

Pep Covas Vidal

P. B. Covas

Curriculum Vitae

 pepcv.gitlab.io

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Personal information

Name Josep Blai Covas Vidal
Birthdate 17/05/1993
Birthplace Palma (Spain)
Email jb.covas@uib.es

Education

- 2011 - 2015 **Physics degree**, *Universitat de les Illes Balears*, Bachelors thesis: "Neutron stars as sources of gravitational waves". Thesis director: Dr. Alicia Sintes. Grade: 9.0
- 2013 - 2014 **SICUE exchange at Universitat Barcelona**, *Optional subjects: Astronomy, Observational Astronomy, Astrophysics and Cosmology, General Relativity*
- 2015 - 2016 **Masters degree in Advanced Physics and Applied Mathematics (with a specialty in General Relativity and Astrophysics)**, *Universitat de les Illes Balears*, Masters thesis: "Characterization of the Hough all-sky search for continuous gravitational wave signals using LIGO data". Thesis director: Dr. Alicia Sintes. Grade: 9.0
- 2016 - 2020 **Doctoral Degree in Physics**, *Universitat de les Illes Balears*, Title: "Searching for continuous gravitational waves with Advanced LIGO". Thesis director: Dr. Alicia Sintes

Work experience

- 2015 - 2017 **Scientific/Technical support at the Relativity and Gravitation group of the University of the Balearic Islands**, *Maintainer of the group web page (grg.uib.es), Twitter account manager (@UIBGRG), maintainer of the group computational assets (clusters, wikis, ...)*, Hired by Garantia Juvenil 01/12/2015 - 30/11/2017 094977 - PEJ-2014-P-00477 J. B. COVAS
- 2018 - 2020 **PhD student with FPI-CAIB FPI/2134/2018 fellowship**
- 2020 - 2022 **Junior postdoc at the Continuous Gravitational Waves group of the Max Planck Institute for Gravitational Physics**
- 2022 - 2024 **Marie Curie Individual Fellowship at the Continuous Gravitational Waves group of the Max Planck Institute for Gravitational Physics**
- 2024 **Junior postdoc at the Continuous Gravitational Waves group of the Max Planck Institute for Gravitational Physics**
- 2024 - **Assistant professor ("professor ajudant doctor") at the University of the Balearic Islands**

Papers with direct contribution

A full list of refereed papers can be found in my ORCID profile. All publications are also freely available at arXiv.

- 2026 **Wide parameter-space O3 search for continuous gravitational waves from unknown neutron stars in binary systems**, *P. B. Covas et al.*, The Astrophysical Journal
- 2025 **Generalized parameter-space metrics for continuous gravitational-wave searches**, *P. B. Covas et al.*, Physical Review D
- 2025 **Continuous gravitational waves from unknown neutron stars in binary systems**, *P. B. Covas*, Proceedings of the 59th Rencontres de Moriond
- 2025 **Search for Continuous Gravitational Waves from Unknown Neutron Stars in Binary Systems with Long Orbital Periods in O3 Data**, *P. B. Covas et al.*, The Astrophysical Journal
- 2024 **New framework to follow up candidates from continuous gravitational-wave searches**, *P. B. Covas et al.*, Physical Review D
- 2024 **Bayesian $\mathcal{F}$ -statistic-based parameter estimation of continuous gravitational waves from known pulsars**, *A. Ashok et al.*, Physical Review D
- 2022 **Improved all-sky search method for continuous gravitational waves from unknown neutron stars in binary systems**, *P. B. Covas et al.*, Physical Review D
- 2022 **Improved short-segment detection statistic for continuous gravitational waves**, *P. B. Covas et al.*, Physical Review D
- 2022 **Constraints on r-modes and Mountains on Millisecond Neutron Stars in Binary Systems**, *P. B. Covas et al.*, The Astrophysical Journal Letters
- 2020 **Effects of proper motion of neutron stars on continuous gravitational-wave searches**, *P. B. Covas*, Monthly Notices of the Royal Astronomical Society
- 2020 **First All-Sky Search for Continuous Gravitational-Wave Signals from Unknown Neutron Stars in Binary Systems Using Advanced LIGO Data**, *P. B. Covas et al.*, Physical Review Letters
- 2019 **All-sky search for continuous gravitational waves from isolated neutron stars using Advanced LIGO O2 data**, *LIGO Scientific Collaboration et al.*, Physical Review D
- 2019 **New method to search for continuous gravitational waves from unknown neutron stars in binary systems**, *P. B. Covas et al.*, Physical Review D
- 2018 **Identification and mitigation of narrow spectral artifacts that degrade searches for persistent gravitational waves in the first two observing runs of Advanced LIGO**, *LSC Instrument Authors et al.*, Physical Review D

Projects

- 2018 **PI of FPI-CAIB: FPI/2134/2018**, Grant to carry out the PhD project "Searching for continuous gravitational waves with Advanced LIGO", December 2018 - November 2022
- 2019 **PI of computational grant at RES with CTE/Power9 computer (Barcelona Supercomputing Center)**, *AECT-2019-1-0021: All-sky searches of continuous gravitational-wave signals from spinning neutron stars in binary systems*, March 1st - June 30th (2019)

- 2019 **PI of computational grant at RES with CTE/Power9 computer (Barcelona Supercomputing Center)**, *AECT-2019-3-0011: All-sky searches of continuous gravitational-wave signals from spinning neutron stars in binary systems using Advanced LIGO O3 data*, November 1st - February 28th (2019-2020)
- 2022 **PI of Marie Curie Individual Fellowship: 101029058**, *Grant to carry out the project "All-sky search for continuous gravitational waves from neutron stars in binary systems"*, May 2022 - April 2024
- 2022 **PI of computational grant at PRACE with JUWELS Booster computer (Jülich Supercomputing Centre)**, *2021250054 (24th project access call): Continuous gravitational waves from unknown neutron stars in binary systems*, April 2022 - March 2023
- 2024 **PI of Vicenç Mut fellowship 2023: PD-036-2023**, *Grant to carry out the project "Searching for continuous gravitational waves"*, Fellowship not taken up
- 2025 **PI of Proyectos de Generación de Conocimiento 2024: PID2024-157460NA-100**, *Grant to carry out the project "New breakthroughs in gravitational-wave astronomy with advanced detectors"*, September 2025 - August 2028, 60 625 €

Research stays

- 2017 **LIGO Hanford Observatory**, *LSC Fellow, work related to detector characterization and line/comb hunting*, May - July 2017
- 2018 **Sapienza Università di Roma**, *STSM belonging to the Cost Action CA16104, work related to adapting SFDB input data to LALSuite code*, September 2018
- 2018 **Max Planck Institute for Gravitational Physics**, *STSM belonging to the Cost Action CA16214, work related to LISA data analysis*, October 2018
- 2019 **LIGO Hanford Observatory**, *LSC Fellow, work related to detector characterization, line/comb hunting and calibration*, March - June 2019
- 2026 **University of Southampton**, *CAIB MOB 25-28, work related to neutron star quadrupole calculations*, June - July 2026

Student supervision and mentoring

- 2018 - 2019 **Mentoring master student**, *Rodrigo Tenorio, Master thesis: "Towards a reformulation of the Hough method for continuous gravitational wave searches"*
- 2022 - 2024 **Co-director of master thesis**, *Paul Ophardt, Master thesis: "Impact of detector networks on the sensitivity of continuous gravitational wave searches"*
- 2023 - 2024 **Mentoring PhD student during final project of PhD thesis**, *Anjana Ashok, paper: "Bayesian $\mathcal{F}$ -statistic-based parameter estimation of continuous gravitational waves from known pulsars"*
- 2025 - 2026 **Supervisor of bachelor's thesis**, *Javier Millan Mir: "Continuous gravitational waves and spin wandering"*, Grade: 9.8
- 2026 - **Co-supervisor of PhD thesis**, *Unai Razkin Zufiaur*
- 2026 - 2027 **Supervisor of bachelor's thesis**, *Joan Cladera Sebastian: "Solving neutron star structure with Physics-Informed Neural Networks"*, Grade:

Teaching

- 2018 - 2019 **Partial Differential Equations I**, *Assistant lecturer, University of the Balearic Islands, Degree in Physics*
- 2019 - 2020 **Partial Differential Equations I**, *Assistant lecturer, University of the Balearic Islands, Degree in Physics*
- 2023 **Introduction to data analysis**, *Lecturer at the "IMPRS Lecture Week 2"*
- 2024 - 2025 **Fundamentals of Facilities**, *Assistant lecturer, University of the Balearic Islands, Degree in Construction*
- 2025 **Introduction to continuous gravitational waves**, *Lecturer at the "International Training Workshop on Frontiers from Quanta to Cosmos Physics"*
- 2025 - 2026 **Mechanics**, *Assistant lecturer, University of the Balearic Islands, Degree in Construction*
- 2025 - 2026 **Fundamentals of Facilities**, *Assistant lecturer, University of the Balearic Islands, Degree in Construction*
- 2025 - 2026 **Research seminars**, *Assistant lecturer, University of the Balearic Islands, Master's Degree in Advanced Physics and Applied Mathematics*
- 2026 - 2027 **Mechanics**, *Main lecturer, University of the Balearic Islands, Degree in Construction*
- 2026 - 2027 **Fundamentals of Facilities**, *Assistant lecturer, University of the Balearic Islands, Degree in Construction*
- 2026 - 2027 **Biophysics**, *Assistant lecturer, University of the Balearic Islands, Degree in Physics*
- 2026 - 2027 **Research seminars**, *Assistant lecturer, University of the Balearic Islands, Master's Degree in Advanced Physics and Applied Mathematics*

--- Outreach

- 2015 - 2017 **Translations of LIGO's science summaries to Spanish and Catalan**
- 2016 **Participant in the "III Jornades de Ciència per a Tothom"**, 5-7 May 2016, Palma, Spain
- 2016 **Participant in the "IV Jornadas de divulgación Innovadora"**, 21-22 October 2016, Zaragoza, Spain
- 2017 **Participant in the TV programme "Balears fa ciència. Mirant al cel: ones gravitacionals, xips, i nines enginyeres"**, 31 December 2017, Palma, Spain
- 2020 **Participant in the "1st UIB scientific outreach competition"**, article "Gravitational waves and neutron stars", 01 February 2020, Palma, Spain
- 2025 **Talk "Ones gravitacional continues" in the "Xerrades a ciència" for students at the University of the Balearic Islands**
- 2025 **Article (awarded for the best outreach contribution in the publications of the "Real Sociedad Española de Física") "Ondas gravitacionales: 10 años después de la primera detección directa" in the "Revista Española de Física, Volume 39, Number 3": https://pepcv.gitlab.io/outreach_anniversary_2025.html**

--- Distinctions and community service

- 2019 **LIGO Laboratory Award for Excellence in Detector Characterization and Calibration (LIGO Laboratory)**, *Honorable mention*, <https://www.ligo.caltech.edu/page/award-excellence-detchar-winner-2019>
- 2025 **Sexenio de Investigación 2017-2022**

Reviewer of

- 2019 **Advanced LIGO O2 all-sky results from FrequencyHough pipeline**
- 2022 - **Physical Review D journal**
- Congress organization
- 2015 **Member of the local organizing committee of the "Spanish Relativity Meeting 2015", 7-10 September 2015, Palma, Spain**
- 2024 **Main organizer of the "Continuous gravitational waves and neutron stars workshop": <https://plan.events.mpg.de/event/133/>, 17-20 June 2024, Hannover, Germany**
- 2025 **Member of the local organizing committee of the "The 10th Anniversary of the Discovery of Gravitational Waves": <https://grg.uib.es/10thAnniversaryGW150914/>, 15-17 September 2025, Palma, Spain**

Committees

- 2025 - **Member of the REDONGRA Exchange Program committee: <https://redongra.github.io/website/exchange-program.html>**

Computer skills

- OS Windows, Mac OS X, Linux (as a user and administrator)
- Languages C, CUDA, Bash, LaTeX, Python, HTML
- Contributed to several codes part of the LALSuite library git.ligo.org/lscsoft/lalsuite

Languages

- Catalan Mother tongue
- Spanish Mother tongue
- English C2 (Cambridge English Language Assessment)
- German B2 level

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