

John Gargalionis

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Experience

- Jan 2022 – Present **Investigador Doctor Senior (IFIC and the University of Valencia, Spain)**
- Successfully graduated an MSc student under my supervision
 - Awarded the [Juan de la Cierva Fellowship](#)
- May 2021 – Oct 2021 **Research Associate (The University of Melbourne)**
- Taken in between the end of PhD and the beginning of first postdoctoral position

Education

- 2016 – 2020 **The University of Melbourne**
PhD in Theoretical Particle Physics
Advisor: Prof. Raymond Volkas
Thesis: [Models of radiative neutrino mass and lepton flavour non-universality](#)
 - Doctoral work awarded [Chancellor's Prize for Excellence in the PhD](#)
- 2014 – 2016 **The University of Melbourne**
MSc in Theoretical Particle Physics (First Class Honour)
Advisors: Prof. Raymond Volkas & Prof. Elisabetta Barberio
Thesis: Neutrino mass through leptiquarks: a new radiative model and its experimental prospects
 - Awarded the [Prof. Kernot Scholarship in Physics](#) (highest mark in cohort)
 - Awarded the [N. D. Goldsworthy Scholarship for Physics](#) (excellence in coursework)
 - Received the Science Abroad Travel Scholarship (funded a research visit to Europe)
 - MSc chosen over fully supported place in Melbourne MD (graduate medicine)
- 2010 – 2014 **The University of Melbourne**
BSc with a Physics major (First Class Honour)
 - Additional specialisations in Classics (Ancient Greek and Latin) and Neuroscience

Publications

- Nov 2022 **Dimension-5 baryon-number violation in low-scale Pati–Salam**
Tomasz P. Dutka & JG
[arXiv:2211.02054](https://arxiv.org/abs/2211.02054), [PhysRevD.107.035019](https://inspirehep.net/literature/2107019)

- Jan 2021 **Exploding operators for Majorana neutrino masses**
JG & Raymond R. Volkas
[arXiv:2009.13537](#), [JHEP01\(2021\)074](#)
- May 2020 **Solutions to Problems at Les Houches Summer School on EFT**
Marcel Balsiger, Marios Bounakis, Mehdi Drissi, JG, Erik Gustafson, Greg Jackson, Matthew Leak, Christopher Lepenik, Scott Melville, Daniel Moreno, Michele Tamaro, Selim Touati, Timothy Trott
[arXiv:2005.08573](#), published as an appendix to the [lecture notes](#)
- Dec 2019 **Radiative neutrino mass model from a mass dimension 11 $\Delta L = 2$ effective operator**
JG, Iulia Popa-Matteiu & Raymond R. Volkas
[arXiv:1912.12386](#), [JHEP03\(2020\)150](#)
- Jun 2019 **A near-minimal leptoquark model for reconciling flavour anomalies and generating radiative neutrino mass**
Innes Bigaran, JG & Raymond R. Volkas
[arXiv:1906.01870](#), [JHEP10\(2019\)106](#)
- Apr 2017 **Reconsidering the one leptoquark solution: flavour anomalies and neutrino mass**
Yi Cai, JG, Michael A. Schmidt & Raymond R. Volkas
[arXiv:1704.05849](#), [JHEP10\(2017\)047](#)
- Apr 2016 **Explaining the 750 GeV diphoton excess with a coloured scalar charged under a new confining gauge interaction**
Robert Foot & JG
[arXiv:1604.06180](#), [PhysRevD.94.011703](#)

Talks and seminars

- July 2023 University of Tokyo
Invited online seminar
- June 2023 [Higgs and Effective Field Theory \(HEFT\) 2023](#), Manchester
Contributed talk, [Slides](#)
- June 2023 University of Basel
Invited seminar
- May 2023 [Planck 2023](#), Warsaw
Contributed parallel talk, [Slides](#)
- Oct 2022 Korean Institute for Advanced Study (KIAS), Seoul
Invited seminar, [Recording on YouTube](#)

- Jun 2022 [Higgs and Effective Field Theory \(HEFT\) 2022](#), Granada
Contributed talk, [Slides](#)
- May 2022 Instituto de Física Corpuscular (IFIC), Valencia
Contributed seminar
- Nov 2020 University of Melbourne
PhD completion seminar
- Oct 2018 Belle II theory interface platform, KEK, Japan
Invited lecture
- May 2018 Monash University, Melbourne
Invited seminar
- Aug 2017 Technische Universität Dortmund
Contributed seminar
- Aug 2017 Technische Universität München
Contributed seminar
- May 2017 Instant workshop on *B*-meson anomalies, CERN
Invited talk, [Recording on CDS](#)
- Dec 2016 APPC-AIP Congress, Brisbane
Contributed parallel talk

Research visits

- Aug 2022 University of Melbourne
Month-long research visit
- May 2022 Laboratory of Subatomic Physics & Cosmology (LPSC), Grenoble
Two-week invited research stay

Honours, scholarships and fellowships

- 2022 [Chancellor's Prize for Excellence in the PhD](#) (The University of Melbourne)
Awarded each year to up to only seven nominees for outstanding doctoral work.
- 2022 Juan de la Cierva Fellowship (Ministerio de Ciencia e Innovación, Spain)
Two years' funding for my own research programme.
- 2018 Science Abroad Travel Scholarship (University of Melbourne)
- 2016 [Australian Postgraduate Award](#) (Australian Federal Government)

- 2015 Prof. Kernot Research Scholarship in Physics (The University of Melbourne)
Awarded to the graduate from the MSc in Physics with the highest grade in research and coursework for that year that continued on to doctoral studies.
- 2014 N. D. Goldsworthy Scholarship (The University of Melbourne)
Awarded for excellence in graduate coursework.

Supervision and teaching

- Sep 2023 **Invited discussion leader: European School of High Energy Physics (Denmark)**
Ran daily discussion sessions with graduate students reviewing lecture materials.
- 2022 **MSc supervision: Elena Bermejo Martínez**
Thesis on baryon- and lepton-number violation in simple BSMEFTs. Has left the field and found employment in the energy sector.
- Oct 2022 **Invited discussion leader: Asia-Europe-Pacific School of High Energy Physics (AEPSHEP) (South Korea)**
Ran daily discussion sessions with graduate students reviewing lecture materials.
- Sem 1, 2020 & 2021 **Teaching assistant, PHYC90008: Quantum Field Theory (The University of Melbourne)**
Tasks included writing assignments and solutions.
- Sem 1, 2020 **High-school teacher (Victorian School of Languages)**
Taught Modern Greek to students in their last year of secondary school, transitioned students to online learning during initial stages of the pandemic.
- Jan 2018 **Tutor: Advanced Scientific Programming in Python Asia-Pacific School (Melbourne)**
Included topics: version control using Git; Python parallelism; context managers and generators; data cleaning and visualisation; Cython, numba and code profiling.
- 2014 – 2019 **Tutor (The University of Melbourne)**
Tutor and grader for a number of undergraduate subjects taught by the school of physics including: Quantum Physics (PHYC30018), Computational Physics (PHYC20013 and PHYC30021), Subatomic Physics (PHYC30011), for which I also redesigned the tutorial worksheets, and first-year physics (PHYC10003). I have also demonstrated labs for first-year and third-year (PHYC30021) physics.
- 2014 – 2016 **Curriculum designer and lecturer (Centre for Adult Education)**
Modern and Ancient Greek

Scientific Outreach

- 2017 Physics Workshops (Hume Central Secondary School)
Designed and coordinated a series of five workshops with secondary school students.

- 2016 Undergraduate seminar series (University of Melbourne)
Presented research work to undergraduate physics students.
- 2015, 2018 & 2019 CoEPP Work Experience Programme
Presented introductory talk on the SM, sat on organising committee.
- 2015 & 2016 International Masterclass in Particle Physics

Skills

Programming languages

- Proficient in: Python and Mathematica
- Familiar with: Haskell, C/C++, Clojure and Scheme

Libraries and frameworks

- Scientific Python: NumPy, SciPy, SymPy, Pandas, Jupyter, *etc.*
- High-quality data visualisation with Matplotlib and Seaborn
- Machine learning with TensorFlow and Keras
- Version control using Git
- Experienced in cluster computing and job submission with PBS and slurm

Pheno

- Confident in analysing the viability of BSM models

Languages

English (native), Greek (fluent), Spanish (intermediate)