

**Carlos Zapata-Carratalá**  
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## Positions

### Teaching Fellow

*Lecturer and academic staff*

University of Edinburgh

2019 - 2021

### Research Assistant

*Researcher and assistant to Michael Atiyah*

Leverhulme Grant

2017 - 2019

### Teaching Assistant

*Tutor and demonstrator*

University of Edinburgh

2015 - 2019

## Research

### Poly-Jacobi Manifolds: the dimensioned approach to Jacobi geometry

2021

<https://arxiv.org/abs/2110.09311>

- (submitted for publication)

### Dimensioned Algebra: the mathematics of physical quantities

2021

<https://arxiv.org/abs/2108.08703>

- (submitted for publication)

### Jacobi geometry and Hamiltonian mechanics: the unit-free approach

2020

<https://doi.org/10.1142/S0219887820300056>

- International Journal of Geometric Methods in Modern Physics, Vol. 17, No. 12, 2030005.

### K-Theory and the Jones Polynomial (with Michael Atiyah)

2018

<https://doi.org/10.1142/10811>

- Reviews in Mathematical Physics: Vol. 30, No. 06, 1840002.

### Observables in the Hamiltonian Formalism

2014

<http://philsci-archive.pitt.edu/11044/>

- Part III essay on philosophy of mathematical physics.

## Education

### University of Edinburgh

*PhD in Mathematical Physics*

Edinburgh, UK

2014 - 2019

- On the generalisations of phase space in Hamiltonian and statistical mechanics, including an original approach to the mathematical foundations of metrology and its interplay with differential geometry.

### University of Cambridge

*Master of Mathematical Sciences - Part III*

Cambridge, UK

2013 - 2014

- Graduated with a Pass with Merit.

### Imperial College of London

*Erasmus exchange*

London, UK

2011 - 2012

- Examinations passed with a First Class Honours.

### University of Valencia

*Degree in Physics*

Valencia, Spain

2009 - 2013

- Graduated with 96% average and extraordinary prize.

## Honours and Awards

Associate Fellow of the Higher Education Academy . . . . .	2021
Teaching Awards Nomination - University of Edinburgh . . . . .	2020
Teaching Awards Nomination - University of Edinburgh . . . . .	2015
Best Talk at the SIAM-Edinburgh Conference . . . . .	2014
University of Edinburgh Principal's Career Development Scholarship . . . . .	2014-2018
Fully Funded La Caixa Graduate Scholarship . . . . .	2013-2014
Extraordinary Award for Higher Education . . . . .	2009-2010
Silver Medal 20th National Physics Olympiads . . . . .	2009
Bronze Medal 22nd National Chemistry Olympiads . . . . .	2009

## Other Experience

### Society for Multidisciplinary and Fundamental Research

*Founder, president, main manager - <https://semf.org.es/index.html>*

Global/Online

2019 - 2021

### Basic Research Community for Physics

*Chairperson, Treasurer - <https://basic-research.org/>*

Global

2017 - 2019

### Society for Industrial and Applied Mathematics Student Chapter

*President - <https://siam-ima.maxwell.ac.uk/>*

Edinburgh

2015 - 2016

## Skills

### • Programming and Markup Languages

- Mathematica - advanced knowledge
- C++ - basic knowledge
- HTML - basic knowledge
- L<sup>A</sup>T<sub>E</sub>X- advanced knowledge

### • Software Tools

- Google offimatics - advanced knowledge
- Adobe Premier Pro and Photoshop - basic knowledge

- Unreal Engine - basic knowledge
- Audacity - basic knowledge

- **Languages**

- English - fluent
- Spanish - fluent (mother tongue)
- Catalan - fluent
- French, Italian, Portuguese - basic reading and listening

- **Other**

- Keyboard player, improviser and composer.
- Harpsichordist and basso continuo player in amateur baroque ensembles.
- High ranking player in professional competitive strategy games: top  $\sim 1\%$  in StarCraft II (real-time strategy), top  $\sim 0.1\%$  in Magic: the Gathering (turn-based strategy).
- Amateur simulation pilot.
- Amateur cinematographer and painter.
- Amateur trekker and survivalist.