

CONTACT DETAILS	<p>Instituto de Física de Cantabria (IFCA) Avenida de los Castros, s/n E-39005 Santander Cantabria, Spain</p>	<p>TEL +34 604 132 549 EMAIL bradkav@gmail.com WEB bradkav.net ORCID ID 0000-0002-3634-4679</p>
DATE OF BIRTH	15th March 1989	NATIONALITY British
ACADEMIC HISTORY	<p>January 2023 - Present: IFCA, University of Cantabria, Santander <i>Ramón y Cajal</i> Fellow (CSIC) Project title: “New Searches for Dark Matter on Earth and in Space”</p> <p>March 2020 - December 2022: IFCA, University of Cantabria, Santander María de Maeztu Unit of Excellence Post-doctoral Position Supervisor: Enrique González Martínez</p> <p>September 2017 - February 2020: GRAPPA, University of Amsterdam GRAPPA Post-doctoral Position Supervisors: Dr. Gianfranco Bertone & Dr. Christoph Weniger</p> <p>October 2014 - August 2017: LPTHE, Paris & IPhT, CEA/Saclay NewDark ERC Post-doctoral Fellowship Supervisor: Dr. Marco Cirelli</p> <p>September 2011 - September 2014: University of Nottingham, UK PhD, Particle Theory Group PhD Thesis: “Confronting Astrophysical Uncertainties in the Direct Detection of Dark Matter” Supervisor: Dr. Anne M. Green</p> <p>September 2010 - June 2011: University of Cambridge, UK Master of Science (MSci): Theoretical Physics Master’s thesis: “Wavepacket scattering simulations using GPGPU”</p> <p>September 2007 - June 2010: University of Cambridge, UK Bachelor of Arts (BA): Natural Sciences (Physical) First class honours degree (ranked 13 out of 578).</p>	
RESEARCH INTERESTS	<p>My main interest is in the phenomenology of particle dark matter (DM). My primary focus has been on the direct detection of DM in underground laboratory experiments. I have previously demonstrated how the astrophysics and particle physics properties of a new DM particle could be robustly determined, and I continue to study novel signatures in the direct search for DM. With the advent of gravitational wave (GW) astronomy, I have begun focusing on the effects of DM on GWs from compact object mergers. In particular, I am interested in whether dense DM halos around black holes (both primordial and astrophysical) can be detected through their influence on merger rates and gravitational waveforms.</p>	
PUBLICATIONS (LIST ONLINE)	<p>57 publications (49 peer-reviewed). These include 5 single-author papers, 16 first-author papers, 1 paper published in <i>Nature Astronomy</i>, 5 papers published in <i>Physical Review Letters</i> and 6 contributions to White Papers.</p>	
SELECTED TALKS (SLIDES ONLINE)	<p>Invited Overview Talk, IRN Terascale Meeting (Online), 5 November 2020 Title: “Constantly changing constraints on Primordial Black Hole Dark Matter”</p> <p>IFCA Colloquium, Santander, Spain, 7 October 2019 Title: “Dark Matter, Black Holes, Gravitational Waves and Werewolves”</p>	

Invited Overview Talk, [Dark Side of the Universe 2018](#), Annecy, 25 June 2018
 Title: “[Signal Diversity and EFT in Dark Matter Direct Detection](#)”

[\[Video\]](#) Invited Overview Talk, [DM-Stat Workshop](#), Banff, 26 February 2018
 Title: “[An Introduction to Dark Matter](#)”

TEACHING & SUPERVISION

Astroparticle Physics Course for bachelor’s students (14 weeks; course design, lectures, TA sessions & grading; Amsterdam University College, 2019).

Theory Workshop for third-year bachelor’s students (4 weeks; lectures, examples classes & project supervision in astroparticle physics; Institute for Theoretical Physics Amsterdam, 2018 & 2019).

GRAPPA Student Seminar series for first-year MSc students (4 weeks; lectures & project supervision in astroparticle physics; University of Amsterdam, 2018).

Individual student supervision:

- Jose Maria Palencia (PhD), University of Cantabria, 2021-2025
- Pratibha Jangra (PhD), University of Cantabria, 2020-2024
- Abram Pérez Herrero (Masters), University of Cantabria, 2021-2022
- Juan Cortabitarte Gutierrez (Masters), University of Cantabria, 2020-2021
- Konstantinos Antoniadis (Masters), University of Amsterdam, 2019-2020

AWARDS & PRIZES [Ramón y Cajal Fellowship 2021](#) ~235k€ (Agencia Estatal de Investigación, Spain), Jan 2023 - Dec 2027.

[FELLINI Fellowship for Innovation](#), ~200k€ (INFN Marie Skłodowska-Curie CO-FUND Fellowship Programme), 2020 [Declined].

[Institute of Physics \(IOP\) Astroparticle Physics Thesis prize](#), 2016.

Foundation Scholarship (for achieving a First class mark in all papers), University of Cambridge, UK, 2009, 2010, 2011.

David Thompson Scholarship (for achieving a First class mark), University of Cambridge, UK, 2008.

COMPUTER SKILLS *Languages & Software:* C/C++, CUDA (GPGPU programming), Fortran, Python, [\(CODE ONLINE\)](#) MATLAB, Mathematica, Git, high-performance computing, N-body simulation.
Operating Systems: Windows, Linux, Mac OS X.

CONFERENCE ORGANISATION

[Dark Collaboration Workshop 2022](#), Head of the Local Organising Committee (Santander, 2022).

[Dark Matter 2021: From the Smallest to the Largest Scales \(DM2021\)](#), Head of the Local Organising Committee (Virtual/Santander, 2021).

[Gravitational Wave Probes of Fundamental Physics \(GW4FP\)](#), Local Organiser (Amsterdam, 2019).

[PHYSTAT Dark Matter](#), Scientific Advisory Committee (Stockholm, 2019).

[7th Amsterdam-Paris-Stockholm meeting](#) (2017).

NewDark mini-workshops: ‘[LCDM, Modified Gravity or new Dark Matter models?](#)’ (2017), ‘[Dark Matter and Stars](#)’ (2016) and ‘[Axion Theory and Searches](#)’ (2015) in Paris, France.

OTHER RELEVANT EXPERIENCE Founder and current organiser of the ‘Dark Collaboration’ working group at IFCA, Santander, aiming to develop new project ideas and collaborations between the local Cosmology and High Energy Physics groups.

Member of the Square Kilometer Array (SKA) ‘Gravitational Waves’ working group; Athena X-ray observatory ‘Physics Beyond the Standard Model’ working group; Laser Interferometer Space Antenna (LISA) Consortium; Lunar Gravitational Wave Antenna (LGWA) working group; and CADEX collaboration.

Referee for grant proposals from the STFC (UK), ISF (Israel) and ERC; and for manuscripts in PRL, PRD, PRR, JCAP, EPJC, Physics of the Dark Universe, Open Journal of Astrophysics & Journal of Open Source Software.

Coordinating and editing publication of outreach article on the NewDark research group: ‘[Dark is the new black](#)’ (Scientia, 2016).

Journal Club organiser and chair at University of Nottingham (2013) and at GRAPPA, University of Amsterdam (2018-2020).

REFEREES

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