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| 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 2024 - Present: IFCA (UC-CSIC), Santander <i>Científico Titular</i> (Tenured Scientist) of the <i>Consejo Superior de Investigaciones Científicas</i> (CSIC)</p> <p>January 2023 - December 2023: IFCA (UC-CSIC), 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 (UC-CSIC), 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>72 publications (64 peer-reviewed). These include 5 single-author papers, 16 first-author papers, 1 paper published in <i>Nature Astronomy</i>, 7 papers published in <i>Physical Review Letters</i> and 7 contributions to White Papers. [This list excludes conference proceedings.]</p> | |

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| SELECTED TALKS (SLIDES ONLINE) | Invited Overview Talk, Joint RENATA-MultiDark Meeting , Santander, 8 Oct 2024 Title: “ Light WIMPs and Light DM ” |
| | Invited Overview Talk, TeVPA 2022 , Kingston, Ontario, 8 Aug 2022 Title: “ Dark Matter in Extreme Environments ” |
| | Invited Overview Talk, IRN Terascale Meeting (Online), 5 November 2020 Title: “ Constantly changing constraints on Primordial Black Hole Dark Matter ” |
| TEACHING & SUPERVISION | Astroparticle Physics Lectures, CERN Summer School (2021, 2022, 2023, 2024, 2025) Lecture 1/2 [Video] , Lecture 2/2 [Video] |
| | Dark Universe Master Course (8 weeks; course design, lectures, TA sessions & grading; University of Cantabria/UIMP, 2023, 2024, 2025). |
| | 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). |
| | Individual student supervision: <ul style="list-style-type: none"> • Carlos Centeno (PhD), University of Cantabria, 2024- • Jose Maria Palencia (PhD), University of Cantabria, 2021- • Pratibha Jangra (PhD), University of Cantabria, 2020- • Agustín Lantero Barreda (PhD), University of Cantabria, 2019- • Samama Fahim (Master), University of Cantabria, 2023-2024 • 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 |
| GRANTS, AWARDS & PRIZES | Consolidación Investigadora 2023 , “ <i>Towards the first Gravitational Wave search for Dark Matter Spikes around Black Holes</i> (DARKSPIKESGW)” (Agencia Estatal de Investigación, Spain) PI, ~ 200k€ , April 2024 - March 2026. |
| | Proyectos de Generación de Conocimiento 2022 , “ <i>Search for light Dark Matter: From phenomenology to underground lab searches</i> (DMPHENO2LAB)” (Agencia Estatal de Investigación, Spain) PI (co-PI: Rocío Vilar Cortabitarte), ~ 280k€ , October 2023 - September 2026. |
| | Ramón y Cajal Fellowship 2021 , “ <i>New Searches for Dark Matter on Earth and in Space</i> ” (Agencia Estatal de Investigación, Spain) PI, ~ 235k€ , Jan 2023 - Dec 2027 [Renounced Jan 2024]. |
| | FELLINI Fellowship for Innovation , “ <i>Detecting Dark Matter dresses around Black Holes with Gravitational Waves</i> (DARKDRESSGW)” (INFN Marie Skłodowska-Curie COFUND Fellowship Programme) PI, ~ 200k€ , 2020 [Declined Jan 2020]. |
| | 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. |

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| COMPUTER SKILLS (CODE ONLINE) | <p><i>Languages & Software:</i> C/C++, CUDA (GPGPU programming), Fortran, Python, MATLAB, Mathematica, Git, high-performance computing, N-body simulation.</p> <p><i>Operating Systems:</i> Windows, Linux, Mac OS X.</p> |
| CONFERENCE ORGANISATION | <p>Dark Matter 2025: From the Smallest to the Largest Scales (DM2025), Head of the Local Organising Committee (Santander, 2025).</p> <p>Dark Matter 2023: From the Smallest to the Largest Scales (DM2023), Head of the Local Organising Committee (Santander, 2023).</p> <p>Dark Collaboration Workshop 2022, Head of the Local Organising Committee (Santander, 2022).</p> <p>Dark Matter 2021: From the Smallest to the Largest Scales (DM2021), Head of the Local Organising Committee (Virtual/Santander, 2021).</p> <p>Gravitational Wave Probes of Fundamental Physics (GW4FP), Local Organiser (Amsterdam, 2019).</p> <p>PHYSTAT Dark Matter, Scientific Advisory Committee (Stockholm, 2019).</p> <p>7th Amsterdam-Paris-Stockholm meeting (2017).</p> <p>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.</p> |
| OTHER RELEVANT EXPERIENCE | <p>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.</p> <p>Coordinator of the Direct Detection working group for the Spanish MultiDark Network.</p> <p>Science coordinator of the CADEx Collaboration.</p> <p>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; and Lunar Gravitational Wave Antenna (LGWA) working group.</p> <p>Referee for grant proposals from the STFC (UK), ISF (Israel), ANID (Chile) 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.</p> <p>Coordinating and editing publication of outreach article on the NewDark research group: ‘Dark is the new black’ (Scientia, 2016).</p> <p>Journal Club organiser and chair at University of Nottingham (2013) and at GRAPPA, University of Amsterdam (2018-2020).</p> |

REFEREES

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