BRADLEY J KAVANAGH

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DATE OF BIRTH 15th March 1989

NATIONALITY British

ACADEMIC HISTORY

October 2014 - September 2017: **LPTHE, Paris & IPhT, CEA/Saclay**
NewDark ERC Post-doctoral Fellowship
Supervisor: Dr. Marco Cirelli

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

September 2010 - June 2011: **University of Cambridge, UK**
Master of Science (MSci): Theoretical Physics
Master's thesis: "Wavepacket scattering simulations using GPGPU"
Modules in quantum field theory, particle astrophysics and cosmology.

June 2010 - September 2010: **University of York, UK**
Transit Scholarship, York Centre for Complex Systems Analysis (YCCSA)
Project: "Voter models on complex and dynamic networks"
Supervisor: Dr. Jamie Wood

September 2007 - June 2010: **University of Cambridge, UK**
Bachelor of Arts (BA): Natural Sciences (Physical)
First class honours degree (ranked 13 out of 578).

RESEARCH INTERESTS

My main research interest is *particle dark matter*, including both how it can emerge from theories of physics beyond the Standard Model and how it can be probed experimentally. My research to date has focused primarily on the direct detection of particle dark matter in underground laboratory experiments. I have previously demonstrated how the mass and interaction cross section of the dark matter particle can be measured in upcoming experiments in spite its unknown astrophysical distribution. My current focus is on how to classify and distinguish different models of dark matter (using direct detection, as well as complimentary information from indirect and collider searches). This will help us understand which experimental approaches will be most fruitful in pinning down the nature and identity of dark matter even further.

SELECTED TALKS

GRAPPA Institute Seminar, Amsterdam, Netherlands, 10 October 2016
Seminar Title: '*Dark Matter Particle Astronomy*'

Particle Physics & Cosmology Seminar, KCL, London, UK, 13 June 2016
Seminar Title: '*You Better Run - Connecting low-energy Dark Matter searches with high-energy physics*'

LPTHE Seminar, Paris, France, 12 Jan 2016
Seminar title: '*Taming astrophysics and particle physics in the direct detection of dark matter.*'

GDR Terascale, Grenoble, France, 23 - 25 Nov 2015
Talk title: '*Dark Matter from the bottom up: constraining effective field theories beyond the Standard Model using low energy DM searches.*'

TeVPA 2015, Kashiwa, Japan, 26 - 30 Oct 2015
Talk title: '*Distinguishing WIMP-nucleon interactions with directional dark matter experiments.*'

CYGNUS2015 Workshop on directional detection of dark matter, Los Angeles, USA, 2 - 4 Jun 2015
Talk titles: '*New directional signatures from non-relativistic effective field theory*' and '*Discretising the velocity distribution for directional dark matter experiments*'

IPhT Seminar, Paris, France, 14 Jan 2015
Talk title: '*Probing the properties of dark matter beyond the discovery era*'

ICAP@IAP Talk, Paris, France, 9 Jan 2015
Talk title: '*Astrophysical uncertainties in direct detection experiments*'

TeVPA/IDM 2014, Amsterdam, Holland, 23-28 Jun 2014
Talk title: '*Measuring the dark matter mass - in spite of astrophysical uncertainties*'

Awards & Prizes

George Green Seminar Prize, University of Nottingham, UK, 2013

2nd Place, Physics Postgraduate Poster Competition, University of Nottingham, UK, 6 February 2013

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, MATLAB, Mathematica, Git, high-performance computing.
Operating Systems: Windows, Linux, Mac OS X.

Other Relevant Experience

Referee for Journal of Cosmology and Astroparticle Physics.

Coordinating and editing publication of outreach article on the NewDark research group: 'Dark is the new black' (Scientia, 2016).

Organiser of NewDark mini-workshops 'Dark Matter and Stars' (June 2016) and 'Axion Theory and Searches' (June 2015) in Paris, France.

Organising Committee member for Young Experimentalists and Theorists Institute (YETI) 2014, Durham, UK.

Giving short outreach talks at undergraduate physics open days at University of Nottingham (2012, 2013) and at University of Cambridge Part III research day (2012).

Organised and chaired student journal club within Particle Theory Group at University of Nottingham.

Marking of undergraduate computing coursework, as well as demonstrating in computing practical classes at University of Nottingham.