

Ciaran A. J. O'Hare

Curriculum Vitae

School of Physics, University of Sydney
Physics Rd, Camperdown NSW 2006, Australia

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📄 cajoha.re

🐦 [cajohare](https://twitter.com/cajohare)

🌐 cajohare

Academic history

- 2022 **ARC DECRA Fellow**, *School of Physics*, University of Sydney, Australia.
- 2019–2021 **Postdoctoral Research Associate**, *School of Physics*, University of Sydney, Australia.
Supervisor: Celine Boehm
- 2017–2019 **Postdoctoral Researcher**, *Departamento de Física Teórica*, Universidad de Zaragoza, España.
Supervisor: Javier Redondo

Education

- 2013–2017 **PhD Physics**, *Particle Cosmology group*, University of Nottingham, United Kingdom.
Supervisor: Anne Green
Thesis: [WIMPs, neutrinos and axions in the next generation of dark matter experiment](#)
- 2009–2013 **Msci Physics**, University of Nottingham, 1st class (average: 92%).
Supervisor: Adam Moss
Thesis: [Dynamics of domain wall systems](#)

Talks

Slides for the majority of my talks are available online at cajoha.re/talks

Invited seminars and colloquia

- 2022 **Swinburne Institute of Technology Colloquium**, 'New discoveries from Gaia and direct dark matter searches'.
- 2022 **UC Santa Barbara**, 'Recoil imaging for dark matter, neutrinos, and BSM physics'.
- 2022 **University of Hawaii**, 'Axions as dark matter'.
- 2022 **Sydney-UNSW Colloquium**, 'Searching for dark particles across disciplines'.
- 2022 **Indian Institute of Technology, Mumbai**, 'New discoveries from Gaia and direct dark matter searches'.
- 2022 **University of New Mexico**, 'Venturing into the neutrino fog'.
- 2022 **Northwestern University**, 'Venturing into the neutrino fog'.
- 2021 **Georg-August-Universität Göttingen**, 'Venturing into the neutrino fog'.
- 2021 **UC San Diego**, 'ALPs to Axions: dark matter in the post-inflationary scenario'.
- 2021 **University of Nottingham**, 'Axions as dark matter'.
- 2021 **Tsung-Dao Lee Institute**, 'Venturing into the neutrino fog'.
- 2021 **Nanjing Normal University**, 'Venturing into the neutrino fog'.
- 2021 **Melbourne University**, 'Venturing into the neutrino fog'.
- 2021 **SLAC**, 'The status and future of directional recoil detection'.
- 2021 **Fermilab**, 'Directional dark matter detection and the CYGNUS project'.
- 2021 **UCLA**, 'Directional dark matter detection'.
- 2021 **Sydney CPPC**, 'Dark matter detection off the beaten path'.
- 2020 **Australian National University**, 'Directional dark matter detection'.
- 2020 **University of New South Wales**, 'Axions and their detection'.

- 2019 **University of Barcelona, 'Axtronomy'.**
 - 2019 **University of Sydney, 'Dark matter detection'.**
 - 2019 **IFT, Madrid, 'Gaia and direct dark matter detection'.**
 - 2019 **Laboratori Nazionali di Frascati, 'Introduction to directional detection'.**
 - 2018 **Texas A&M University, 'How to build an axion observatory'.**
 - 2018 **Max Planck Institute, Munich, 'Axiostronomy'.**
 - 2017 **King's College London, 'Directly detecting the Milky Way halo'.**
- Invited presentations**
- 2022 **International Workshop on Underground Physics, Tokyo, Japan.**
'Recoil imaging and the CYGNUS experiment'
 - 2021 **International Joint Workshop on the SM and Beyond 2021, NTHU, Taiwan.**
'Searching for the axions, on Earth and in space'
 - 2021 **Theory Workshop, DESY.**
'Directional dark matter detection'
 - 2021 **ARC CoE for Dark Matter Fortnightly Meeting, Virtual.**
'Dark photon limits: A cookbook'
 - 2021 **Asian Forum for Accelerators and Detectors, Novosibirsk (Virtual).**
'Directional dark matter detection and the Cygnus experiment'
 - 2021 **ARC CoE for Dark Matter ECR Workshop, Virtual.**
'The Cygnus experiment'
 - 2021 **Axions beyond Gen-2, University of Washington (Virtual).**
'Axion haloscopes and the local dark matter distribution'
 - 2020 **Light Dark World workshop, Virtual.**
'Axion constraints 2020'
 - 2020 **Magnificent CEvNS workshop, Virtual.**
'Neutrino floors'
 - 2020 **IAXO Collaboration Meeting, Virtual.**
'Axion helioscopes as solar magnetometers'
 - 2020 **MIAPP Workshop on axion cosmology, Technical University of Munich.**
'Axion haloscopes and the local dark matter distribution'
 - 2019 **Dark Matter Searches in the 2020s, Institute for Cosmic Ray Research, Tokyo.**
'Breaking through the neutrino floor'
 - 2019 **Cygnus directional detection workshop, Sapienza University of Rome.**
'Physics case for the Cygnus experiment'
 - 2019 **DMUK Meeting, Kings' College London.**
'Gaia and direct dark matter detection'
 - 2019 **Saturnalia Workshop, Universidad de Zaragoza.**
'Dark Matter Hurricane'
 - 2019 **CYGNUS workshop, University of Hawaii (Virtual).**
'Physics reach for the Cygnus experiment'
 - 2018 **MADMAX Collaboration Meeting, Max Planck Institute, Munich.**
'The axion velocity distribution'
 - 2018 **Workshop on ultralight dark matter and axions, University of Michigan.**
'Directional axion detection'
 - 2017 **Theoretical Physics Seminar, Universidad de Zaragoza.**
'Directly detecting the Milky Way halo'
 - 2016 **IDM, University of Sheffield.**
'Dark matter detection and the neutrino floor'
 - 2015 **11th Patras workshop on axions, WIMPs and WISPs, Universidad de Zaragoza.**
'Theoretical prospects for directional WIMP detection'

Other conference & workshop presentations

2021	Asia-Pacific Workshop on Particle Physics and Cosmology , <i>Virtual</i> . 'Searching for dark photons as dark matter'
2019	TeVPA , <i>Sydney, Australia</i> . 'The Cygnus experiment'
2019	15th Patras workshop on axions , <i>Freiburg, Germany</i> . 'Direct detection and <i>Gaia</i> '
2018	OAJ-LSC Synergies meeting , <i>Universidad de Zaragoza</i> . ' <i>Gaia</i> and direct dark matter detection'
2018	14th Patras workshop on axions , <i>DESY, Germany</i> . 'Directional axion detection'
2017	13th Patras workshop on axions , <i>Thessaloniki, Greece</i> . 'Axion/WIMP astronomy in dark matter experiments'
2017	IOP Joint APP and HEPP Conference , <i>University of Sheffield</i> . 'Measuring the dark matter velocity distribution with WIMPs and axions'
2016	TeVPA , <i>CERN</i> . 'Dark matter detection and the neutrino floor'
2016	LINK'16 Interdisciplinary conference , <i>East Midlands Conference Centre</i> . 'Detecting Dark Matter'
2015	DMUK , <i>University of Liverpool</i> . 'Directional dark matter detection and the neutrino background'
2014	BUSSTEPP , <i>University of Southampton</i> . 'Directional detection of dark matter substructure'

Code

2021	CompAxion . Python notebooks for calculating model parameters and constraints for the "companion axion" model.
2021	NeutrinoFog . Code for the neutrino floor/fog for direct dark matter searches
2021	DarkPhotonCookbook . Code for accounting for daily modulation effects in direct searches for dark photons
2020	AxionLimits . Library of astrophysical, cosmological and experimental constraints on axions and axion-like particles [DOI: 10.5281/zenodo.3932430, Citations: 35]
2020	solax . Likelihood-based data analysis code for axion helioscopes such as IAXO. Includes precise solar axion flux calculations which account for the solar magnetic field.
2020	AtmNuFloor . Code for calculating the neutrino floor to direct dark matter experiments. It also allows for the inclusion of time, target and direction dependent methods for overcoming the neutrino floor.
2019	DarkShards . Code for analysing <i>Gaia</i> data to fit velocity and action-space substructures, as well as generate their corresponding signals in dark matter experiments.
2019	IAXOmass . Likelihood analysis code for measuring the axion mass in IAXO.

Other academic service

2015	Journal referee . Journal of Cosmology and Astroparticle Physics, Physical Review Letters, Physical Review D, Astronomy & Astrophysics, SciPost Physics, European Physics Journal C
2022	International advisory committee , <i>International Dark Matter conference</i> , Vienna, Austria. https://indico.cern.ch/event/922783/ .
2020	Sydney CPPC . Organising a series of weekly online seminars and maintaining the YouTube channel .

- 2020
2022
Dark Chatter.
Host and organiser of a [web-series](#) for the promotion of early career researchers.
- 2021
2022
Snowmass '21, white paper convener.
Instrumentation Frontier (IF5-WP3): Recoil imaging with micro-pattern gas detectors
- 2021
PDG Review.
Supplied all six original figures for the chapter "Axions and other similar particles" in the 2021 [Particle Data Group \(PDG\) review of particle physics](#).
- 2020
International advisory committee, *International Dark Matter conference*, Vienna, Austria.
<http://idm2020.hephy.at/>.
- 2018
Local organising committee, *4th MADMAX Collaboration Meeting*, Zaragoza, Spain.
<https://indico.mpp.mpg.de/event/6018/overview>.
- 2018
Local organising committee, *Probing the dark universe synergies workshop*, Zaragoza, Spain.
<https://riastronomia.es/en/probing-the-dark-universe-oaj-lsc-synergies/>.

Teaching and Supervision

The University of Sydney

- 2022
Lecturer for OLET1640: Astronomy, from the Big Bang to Darkness, 1st year course.
4 hours lectures + 16 hours tutorials
- 2021
2022
Dalyell Showcase, Groups of 1st year BSc students (semester-long project).
10 students total across two years
- 2020
2022
Physics Honours, 4th year BSc(Hons) students (year-long project).
3 students total across three years
- 2020
2022
Special Studies Program, 1st and 2nd year BSc students (semester-long project).
17 students total across three years
- 2020
Summer internship, High school student.

University of Nottingham

- 2016
2017
MSci Project, Developing Monte Carlo simulations for dark matter detectors.
(2 × 4th year students)
- 2015
2016
MSci Project, Distinguishing neutrino and WIMP signals in dark matter detectors.
(2 × 4th year students)
- 2013
2016
2nd year Msci physics workshops, *University of Nottingham*,
Approximately 3 hr/wk of workshop instruction in four 2nd year Physics courses.

 - Quantum mechanics
 - Thermal Physics and Statistical Mechanics
 - Vector calculus and electromagnetism
 - Optics and Fourier analysis

Media

Articles written

- 2020
CERN Courier, *Astroparticle physicists head down under* .
<https://cerncourier.com/a/astroparticle-physicists-head-down-under/>

Media coverage

- 2022
New Scientist, *DNA-based detector could precisely track subatomic particles*.
<https://www.newscientist.com/article/2316360-dna-based-detector-could-precisely-track-subatomic-particles/>
- 2021
American Physical Society News, *Redefining How Neutrinos Impede Dark Matter Searches*.
<https://physics.aps.org/articles/v14/s154>
- 2021
Centre of Excellence for Dark Matter Particle Physics, *Meet the researcher*.
<https://www.centredarkmatter.org/all-posts/meet-the-researcher-ciaran-ohare-htrjn-mjf82>
- 2021
Discover magazine, *How DNA can help in the search for dark matter* .
<https://www.discovermagazine.com/the-sciences/how-dna-can-help-the-search-for-dark-matter>

2020

AstroBites, *MACHOs Find a New Weight Class to Compete In* .

<https://astrobites.org/2020/09/08/machos-weight-class/>

My publication *O'Hare et al. 2018* was covered by 49 media outlets in 2018.

Altmetric score of 495 (top 5% of all research outputs): <https://aps.altmetric.com/details/45496963>

2018

CNN, *A dark matter hurricane is headed our way [sic]*.

<https://edition.cnn.com/2018/11/19/opinions/dark-matter-hurricane-headed-our-way-lincoln-opinion/index.html>

2018

Astronomy magazine, *A 'dark matter hurricane' is storming past Earth* .

<http://www.astronomy.com/news/2018/11/a-dark-matter-hurricane-is-storming-past-earth>

2018

Cosmos magazine, *Researchers brace for dark matter 'hurricane'* .

<https://cosmosmagazine.com/space/researchers-brace-for-dark-matter-hurricane>

2018

CNET, *Scientists predict a 'dark matter hurricane' will collide [sic] with the Earth* .

<https://www.cnet.com/news/scientists-predict-a-dark-matter-hurricane-will-collide-with-the-earth/>

2018

Discover Magazine, *A 'Dark Matter Hurricane'* .

<http://blogs.discovermagazine.com/d-brief/2018/11/12/dark-matter-hurricane/>

2018

Gizmodo Magazine, *So What's Going on With That 'Hurricane of Dark Matter?'* .

<https://gizmodo.com/so-whats-going-on-with-that-hurricane-of-dark-matter-1830420899>

Outreach

Aimed at the public

2020

Dark Matter Day, *Virtual*.

2021

Speaker and panel member for an annual series of events organised as part of the worldwide Dark Matter Day (31st October)

2018

Science Slam, *DESY, Hamburg*.

'On safari in the Milky Way'

2017

Pint of Science Festival, *Bunkers Hill pub, Nottingham*.

'The Cosmic Pint'

2017

Guest lecture, *Manchester Astronomy Society*.

'The Dark Side'

2015

TEDxUoN talk, *Portland Building, Nottingham*.

'Detecting Dark Matter'

2015

Pub.hD talk, *Vat and Fiddle pub, Nottingham*.

'Detecting Dark Matter'

Aimed at students

2021

PhySoc guest lecture, *University of Sydney*.

Lecture on 'Dark matter' aimed at Sydney undergraduates

2020

Sydney Physics Dialogues, *University of Sydney*.

Lecture on 'Dark matter' aimed at international undergraduates

2018

School visit, *Colegio Nuestra Señora del Pilar, Zaragoza*.

Aimed at 14-16 year old science and english students.

2017

School visit, *Chilwell school, Nottinghamshire*.

Aimed at students thinking of studying physics at university.

2014

Ambition Nottingham.

2017

A series of programs at UoN aimed at local students from backgrounds under-represented at universities in the UK. I was heavily involved in the physics and astronomy 'course tasters' for the scheme as both an organiser and a lecturer.

2013

University of Nottingham open days.

2017

My roles involved guiding visitors around the School of Physics and giving information on research programs, undergraduate and postgraduate courses. I also ran drop-in sessions and demonstrations for the Particle Cosmology group.

I upload slides and other material related to my outreach at <https://cajoha.re/outreach>

Publications

Total citations: 1,538. Collected from the [inspireHEP](#) database

- Rybka et al. 2022 **35.** [‘Axion direct detection’](#)
Adams et al.
Snowmass 2021 Cosmic Frontier White Paper (Contributed 3 figures)
[Cited by 4 records]
- Banerjee et al. 2022 **34.** [‘New Horizons: Scalar and Vector Dark Matter’](#)
Banerjee et al.
Snowmass 2021 Cosmic Frontier White Paper (Contributed ~2000 words and 1 figure)
[Cited by 2 records]
- Akerib et al. 2022 **33.** [‘Dark Matter Direct Detection to the Neutrino Fog’](#)
Aalbers et al.
Snowmass 2021 Cosmic Frontier White Paper (Contributed 2000 words and 2 figures)
- Abdullah et al. 2022 **32.** [‘Coherent elastic neutrino-nucleus scattering: Terrestrial and astrophysical applications’](#)
Abdullah et al.
Snowmass 2021 Neutrino Frontier White Paper (Contributed ~1000 words and 1 figure)
[Cited by 4 records]
- O’Hare et al. 2022b **31.** [‘Recoil imaging for dark matter, neutrinos, and beyond the Standard Model physics’](#)
C.A.J. O’Hare et al.
Snowmass 2021 Instrumentation Frontier White Paper (Coordinator, and lead author)
[Cited by 2 records]
- Aalbers et al. 2022 **30.** [‘A Next-Generation Liquid Xenon Observatory for Dark Matter and Neutrino Physics’](#)
J. Aalbers et al.
Submitted to *New Journal of Physics* (Contributed ~1000 words and 1 figure)
[Cited by 7 records]
- O’Hare et al. 2022a **29.** [‘Simulations of axion-like particles in the post-inflationary scenario’](#)
C.A.J. O’Hare, G. Pierobon, J. Redondo, Y.Y.Y. Wong
Phys. Rev. D **105** 055025 (2022)
[Cited by 6 records, [animations](#)]
- Chen et al. 2021b **28.** [‘Cosmology of the companion-axion model: dark matter, gravitational waves, and primordial black holes’](#)
Z. Chen, A. Kobakhidze, C.A.J. O’Hare, Z.S.C. Picker, G. Pierobon
arXiv:2110.11014
[Cited by 2 records, github page: <https://github.com/cajohare/CompAxion>]
- Chen et al. 2021a **27.** [‘The companion-axion model: photon interactions and constraints’](#)
Z. Chen, A. Kobakhidze, C.A.J. O’Hare, Z.S.C. Picker, G. Pierobon
[Cited by 2 records, github page: <https://github.com/cajohare/CompAxion>]
- O’Hare 2021 **26.** [‘Fog on the horizon: a new definition of the neutrino floor for direct dark matter searches’](#)¹
C. A. J. O’Hare
Phys. Rev. Lett. **127**, 251802 (2021)
[Cited by 11 records, github page: <https://github.com/cajohare/NeutrinoFog>]
- O’Hare et al. 2021a **25.** [‘Particle detection and tracking with DNA’](#)
C. A. J. O’Hare, Vassili G. Matsos, Joseph Newton, Karl Smith, Joel Hochstetter, Ravi Jaiswar, Wunna Kyaw, Aimee McNamara, Zdenka Kuncic, Sushma Nagaraja Grellscheid, and Céline Boehm
Eur. Phys. J. C, **82** 4 (2022) 306
[Cited by 2 records]
- Boehm et al. 2021b **24.** [‘Comment on: Cosmological black holes are not described by the Thakurta metric’](#)
C. Boehm, A. Kobakhidze, C. A. J. O’Hare, Z. S. C. Picker, M. Sakellariadou
arXiv:[2105.14908]
[Cited by 8 records]
- Caputo et al. 2021 **23.** [‘Dark photon limits: a cookbook’](#)
A. Caputo, A. Millar, C. A. J. O’Hare, E. Vitagliano
Phys. Rev. D **104**, 095029 (2021)
[Cited by 38 records, github page: <https://github.com/cajohare/DarkPhotonCookbook>]

- Vahsen et al. 2021 **22.** 'Directional recoil detection'
S. Vahsen, C. A. J. O'Hare, D. Loomba
Annu. Rev. Nucl. Part. Sci. **71** 189–224 (2021)
[Cited by 23 records]
- Böehm et al. 2021a **21.** 'Eliminating the LIGO bounds on primordial black hole dark matter'
C. Böehm, A. Kobakhidze, C. A. J. O'Hare, Z. S. C. Picker, M. Sakellariadou
JCAP **03** 078 (2021)
[Cited by 34 records]
- Vahsen et al. 2020 **20.** 'CYGNUS: Feasibility of a nuclear recoil observatory with directional sensitivity to dark matter and neutrinos'
S. Vahsen, C. A. J. O'Hare et al.
[Cited by 38 records]
- O'Hare & Vitagliano 2020 **19.** 'Cornering the axion with CP -violating interactions'
C. A. J. O'Hare, E. Vitagliano
Phys. Rev. D **102**, 115026 (2020)
[Cited by 25 records, github page: <http://cajohare.github.io/AxionLimits>]
- O'Hare 2020 **18.** 'Can we overcome the neutrino floor at high masses?'
C. A. J. O'Hare
Phys. Rev. D **102**, 063024 (2020)
[Cited by 30 records, github page: <http://github.com/cajohare/AtmNuFloor>]
- O'Hare et al. 2020b **17.** 'Axion helioscopes as solar magnetometers'
C. A. J. O'Hare, A. Caputo, A. J. Millar, E. Vitagliano
Phys. Rev. D **102**, 043019 (2020)
[Cited by 25 records, github page: <http://cajohare.github.io/solax>]
- O'Hare et al. 2020a **16.** 'Dark Shards: velocity substructure from *Gaia* and direct searches for dark matter'
C. A. J. O'Hare, N. W. Evans, C. McCabe, G. Myeong, V. Belokurov
Phys. Rev. D **101** (2020) no.2, 023006
[Cited by 39 records, github page: <http://cajohare.github.io/DarkShards>]
- Dafni et al. 2019 **15.** 'Weighing the Solar Axion'
T. Dafni, C. A. J. O'Hare, J. Galán, I. G. Irastorza, F. J. Iguaz, K. Jakovčić, B. Lakić, G. Luzón, J. Redondo, E. Ruiz Chóliz
Phys. Rev. D **99** 035037 (2019)
[Cited by 26 records, github page: <http://cajohare.github.io/IAXOmass>]
- Evans et al. 2019 **14.** 'SHM⁺⁺: A refinement of the Standard Halo Model for dark matter searches'
N. W. Evans, C. A. J. O'Hare, C. McCabe
Phys. Rev. D **99**, 023012 (2019)
[Cited by 98 records]
- O'Hare et al. 2018 **13.** 'A dark matter hurricane: measuring the S1 stream with dark matter detectors'²
C. A. J. O'Hare, C. McCabe, N. W. Evans, G. Myeong, V. Belokurov
Phys. Rev. D **98**, 103006 (2018)
[Cited by 55 records]
- Knirck et al. 2018 **12.** 'Directional axion detection'
S. Knirck, A. Millar, C. A. J. O'Hare, J. Redondo, F. Steffen
JCAP **11** 051 (2018)
[Cited by 49 records]
- O'Hare & Burrage 2018 **11.** 'The symmetron field profile in the galactic disk'
C. A. J. O'Hare & C. Burrage
Phys. Rev. D **98** 064019 (2018)
[Cited by 16 records]
- O'Hare et al. 2017 **10.** 'Time-integrated directional detection of dark matter'
C. A. J. O'Hare, B. J. Kavanagh, A. M. Green
Phys. Rev. D **96**, 083011 (2017)
[Cited by 21 records]
- Battaglieri et al. 2017 **9.** 'US Cosmic Visions: New Ideas in Dark Matter 2017: Community Report'³
M. Battaglieri et al., FERMILAB-CONF-17-282-AE-PPD-T (2017)
[Cited by 544 records]

- O'Hare 2017 **8.** ['Terrestrial WIMP/Axion astronomy'](#)
C. A. J. O'Hare
Contributed to the 13th Patras Workshop on Axions, WIMPs and WISPs, Thessaloniki
[Cited by 1 record]
- O'Hare & Green 2017 **7.** ['Axion astronomy with microwave cavity experiments'](#)
C. A. J. O'Hare & A. M. Green
Phys. Rev. D **95** 063017 (2017)
[Cited by 56 records]
- Kavanagh & O'Hare 2017 **6.** ['Reconstructing the three-dimensional local dark matter velocity distribution'](#)
B. J. Kavanagh & C. A. J. O'Hare
Phys Rev. D **94**, 123009 (2016)
[Cited by 23 records]
- O'Hare 2016 **5.** ['Dark matter astrophysical uncertainties and the neutrino floor'](#)
C. A. J. O'Hare
Phys. Rev. D **94**, 063527 (2016)
[Cited by 55 records]
- Mayet et al. 2016 **4.** ['A review of the discovery reach of directional Dark Matter detection'](#)⁴
F. Mayet, A. M. Green, J. B. R. Battat, J. Billard, N. Bozorgnia, G. B. Gelmini, P. Gondolo, B. J. Kavanagh, S. K. Lee, D. Loomba, J. Monroe, B. Morgan, C. A. J. O'Hare, A. H. G. Peter
Physics Reports **627** (2016) 1
[Cited by 172 records]
- O'Hare 2017 **3.** ['Theoretical prospects for directional WIMP detection'](#)
C. A. J. O'Hare
Contributed to the 11th Patras Workshop on Axions, WIMPs and WISPs, Zaragoza
[Cited by 1 record]
- O'Hare et al. 2015 **2.** ['Readout strategies for directional detection beyond the neutrino background'](#)⁵
C. A. J. O'Hare, A. M. Green, J. Billard, E. Figueroa-Feliciano, L. E. Strigari
Phys. Rev. D **92**, 063518 (2015)
[Cited by 77 records]
- O'Hare & Green 2014 **1.** ['Directional detection of dark matter streams'](#)⁶
C. A. J. O'Hare & A. M. Green
Phys Rev. D **90**, 123511 (2014)
[Cited by 42 records]

¹ PRL [Editor's suggestion](#) and featured in [APS Physics](#)

² Featured in [APS Physics](#)

³ Contributed projections for the CYGNUS experiment

⁴ Selected as a highlighted article in [Physics Reports](#)

⁵ Contains figure selected for [PRD Kaleidoscope Sep 2015](#)

⁶ Contains figure selected for [PRD Kaleidoscope Dec 2014](#)