

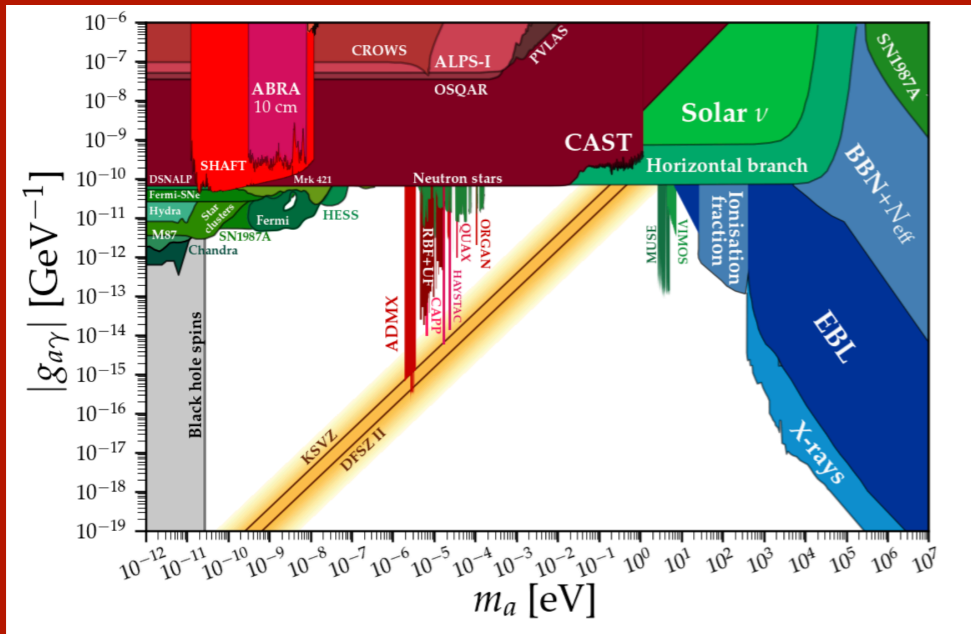
Ciaran O'Hare

Sydney

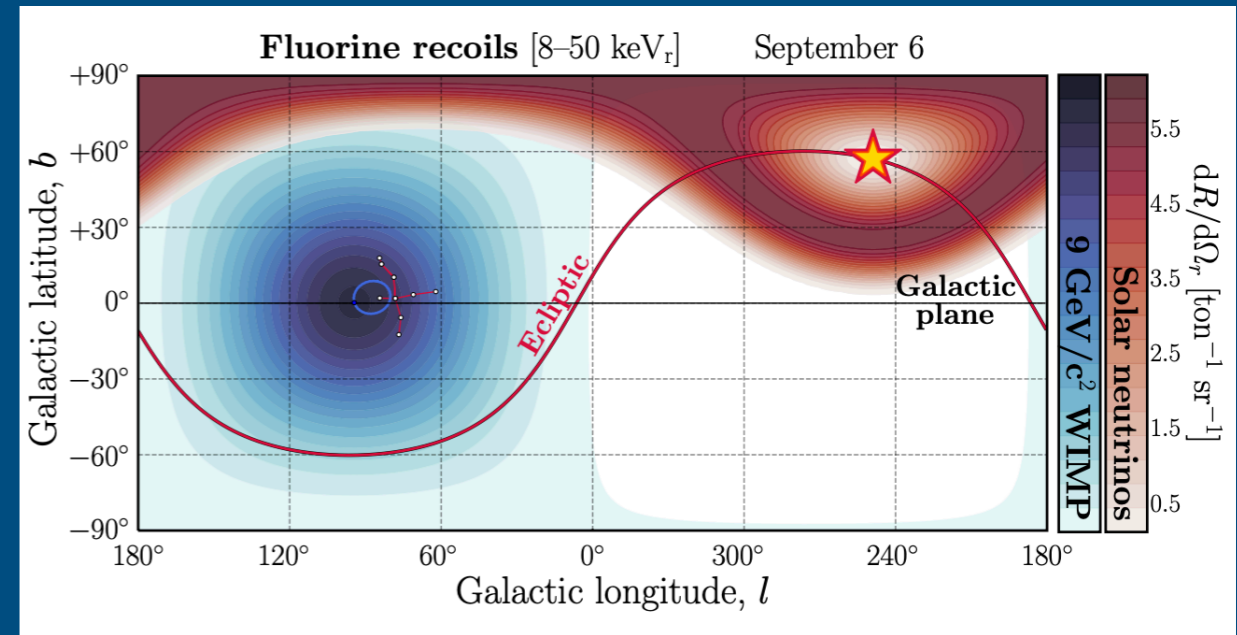
web: cajoha.re

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

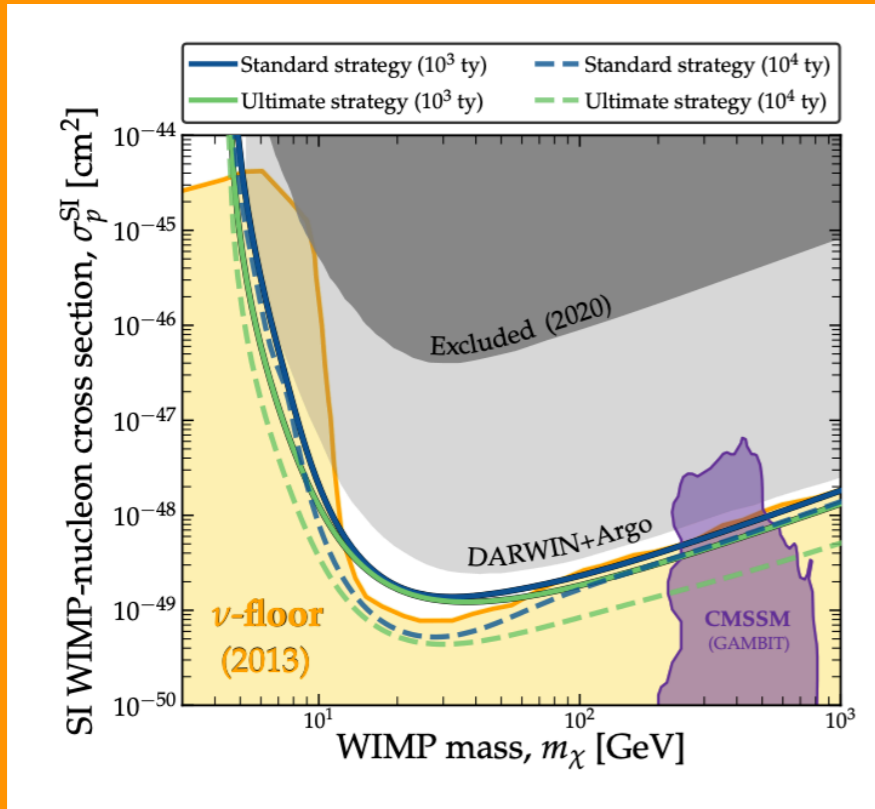
Axion searches



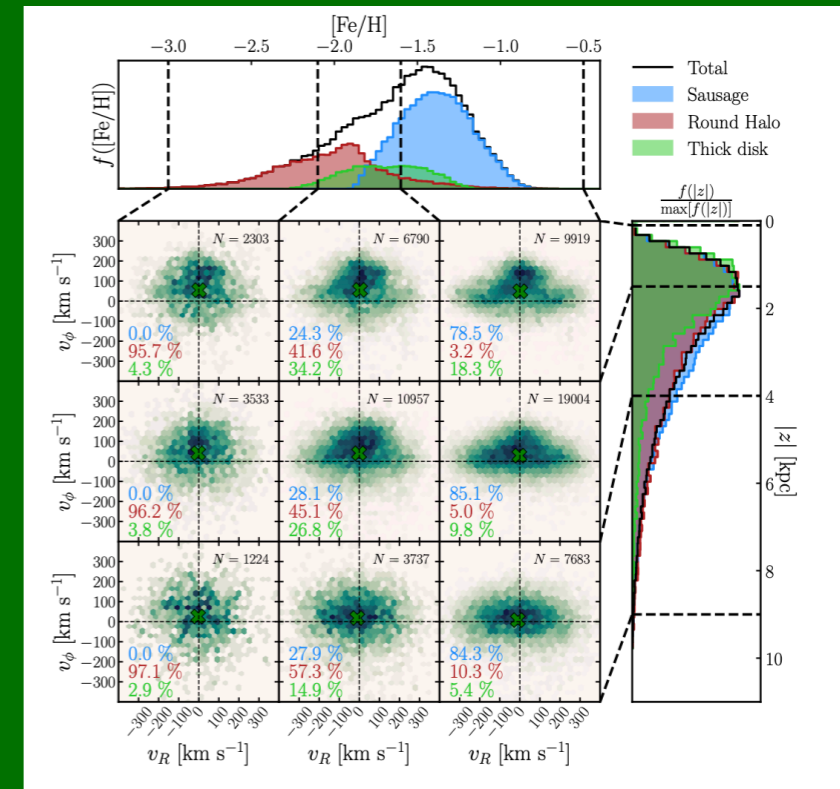
Directional detectors/CYGNUS



Some research interests



Neutrinos in DM experiments/ Neutrino floor



Gaia and the DM velocity distribution

Axion searches

2006.10415

Axion helioscopes as solar magnetometers

Ciaran A. J. O'Hare,^{1,a} Andrea Caputo,^{2,b} Alexander J. Millar,^{3,4,c} and Edoardo Vitagliano^{5,d}

¹*School of Physics, Physics Road, The University of Sydney, NSW 2006 Camperdown, Sydney, Australia*

²*Instituto de Fisica Corpuscular, Universidad de Valencia and CSIC, Edificio Institutos Investigacion, Catedratico Jose Beltran 2, Paterna, 46980 Spain*

2010.03889

Cornering the axion with CP-violating interactions

Ciaran A. J. O'Hare^{1,a} and Edoardo Vitagliano^{2,b}

¹*Sydney Consortium for Particle Physics and Cosmology, School of Physics, The University of Sydney, Physics Road, NSW 2006 Camperdown, Sydney, Australia*

²*Department of Physics and Astronomy, University of California, Los Angeles, California, 90095-1547, USA*
(Dated: October 14, 2020)

Some papers

2002.07499

Can we overcome the neutrino floor at high masses?

Ciaran A. J. O'Hare^{1,a}

¹*Sydney Consortium for Particle Physics and Cosmology, University of Sydney, School of Physics, NSW 2006, Australia*

(Dated: September 28, 2020)

1604.03858

Dark matter astrophysical uncertainties and the neutrino floor

Ciaran A. J. O'Hare*

School of Physics and Astronomy, University of Nottingham, University Park, Nottingham, NG7 2RD, UK

(Dated: April 14, 2016)

**Neutrinos in DM experiments/
Neutrino floor**

Directional detectors/CYGNUS

2008.12587

CYGNUS: Feasibility of a nuclear recoil observatory with directional sensitivity to dark matter and neutrinos

S. E. Vahsen,¹ C. A. J. O'Hare,² W. A. Lynch,³ N. J. C. Spooner,³ E. Baracchini,^{4,5,6} P. Barbeau,⁷

J. B. R. Battat,⁸ B. Crow,¹ C. Deaconu,⁹ C. Eldridge,³ A. C. Ezeribe,³ M. Ghrear,¹ D. Loomba,¹⁰

K. J. Mack,¹¹ K. Miuchi,¹² F. M. Mouton,³ N. S. Phan,¹³ K. Scholberg,⁷ and T. N. Thorpe^{1,6}

¹*Department of Physics and Astronomy, University of Hawaii, Honolulu, Hawaii 96822, USA*

²*The University of Sydney, School of Physics, NSW 2006, Australia*

1708.02959

Time-integrated directional detection of dark matter

Ciaran A. J. O'Hare,^{1,*} Bradley J. Kavanagh,^{2,†} and Anne M. Green^{1,‡}

¹*School of Physics and Astronomy, University of Nottingham, University Park, Nottingham, NG7 2RD, UK*

²*LPTHE, CNRS, UMR 7589, 4 Place Jussieu, F-75252, Paris, France*

1909.04684

KCL-PH-TH-2019-58

Dark Shards: velocity substructure from *Gaia* and direct searches for dark matter

Ciaran A. J. O'Hare,^{1,*} N. Wyn Evans,^{2,†} Christopher McCabe,^{3,‡} GyuChul Myeong,^{2,§} and Vasily Belokurov²

¹*The University of Sydney, School of Physics, New South Wales, 2006, Australia*

²*Institute of Astronomy, Madingley Rd, Cambridge, CB3 0HA, United Kingdom*

³*Department of Physics, King's College London, Strand, London, WC2R 2LS, United Kingdom*

(Dated: January 15, 2020)

1807.09004

KCL-PH-TH-2018-38

A Dark Matter Hurricane: Measuring the S1 Stream with Dark Matter Detectors

Ciaran A. J. O'Hare,^{1,*} Christopher McCabe,^{2,†} N. Wyn Evans,^{3,‡} GyuChul Myeong,³ and Vasily Belokurov³

¹*Departamento de Física Teórica, Universidad de Zaragoza, Pedro Cerbuna 12, E-50009, Zaragoza, España*

²*Department of Physics, King's College London, Strand, London, WC2R 2LS, United Kingdom*

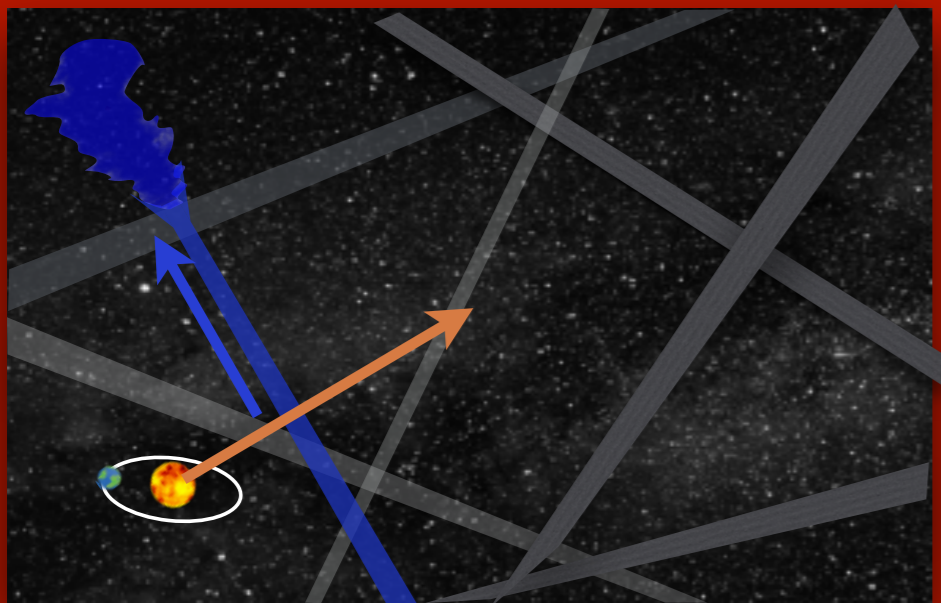
³*Institute of Astronomy, Madingley Rd, Cambridge, CB3 0HA, United Kingdom*

(Dated: November 8, 2018)

Gaia and the DM velocity distribution

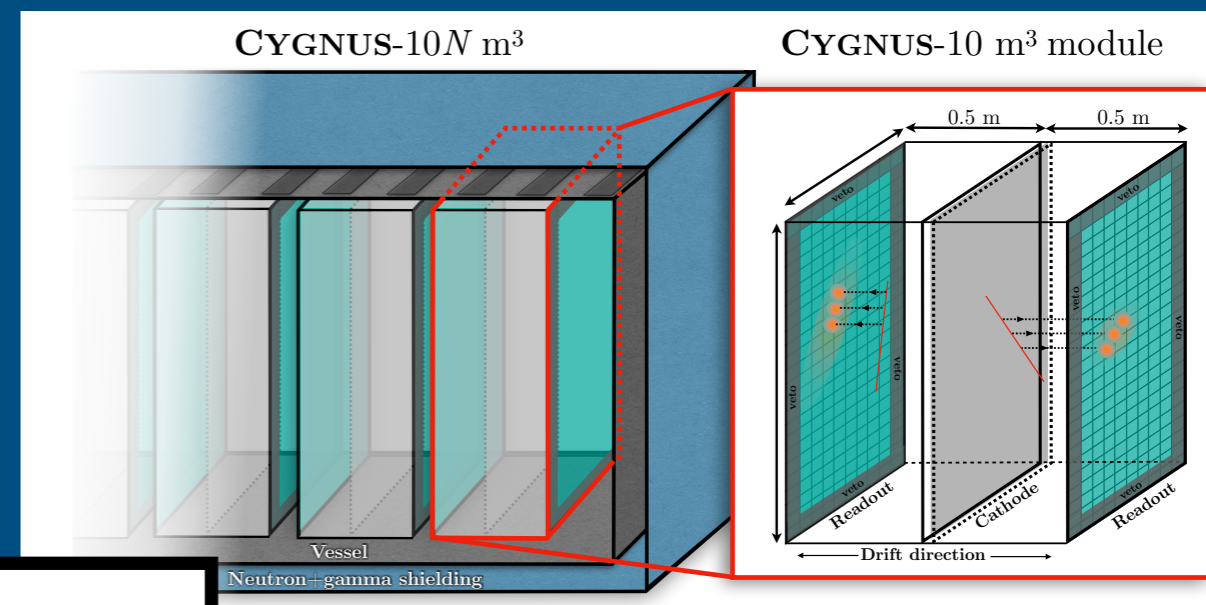
Axion DM substructure:

Direct & indirect signals of miniclusters and axion stars



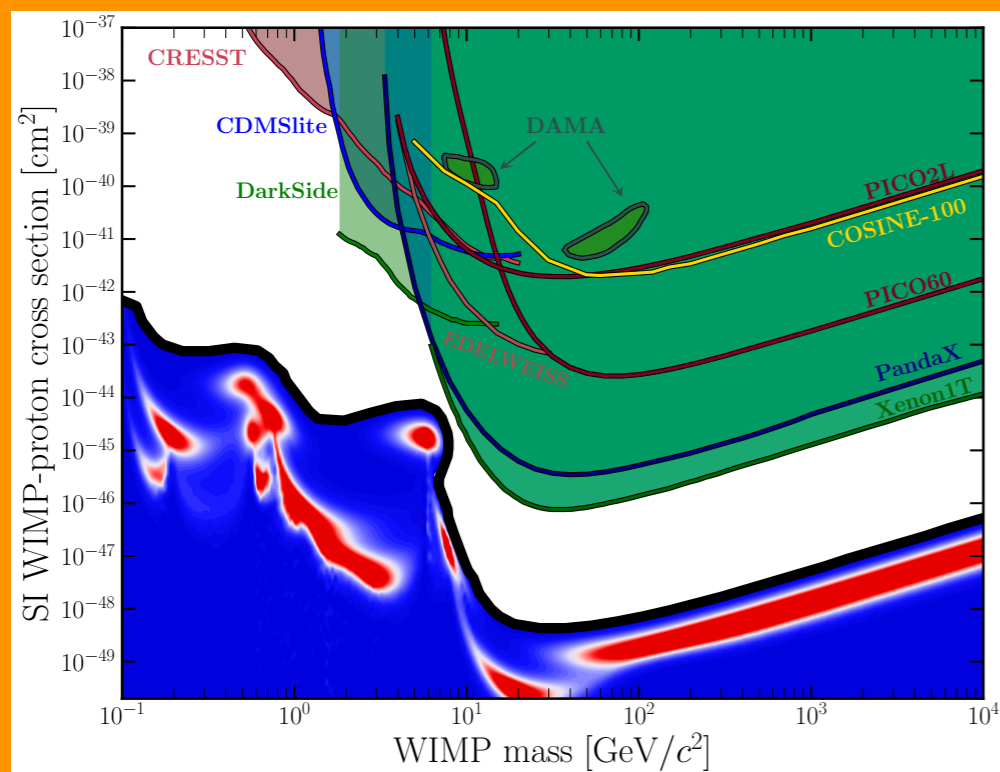
CYGNUS:

Physics potential of a $>10 \text{ m}^3$ -scale directional gas TPC for nuclear/electronic recoils

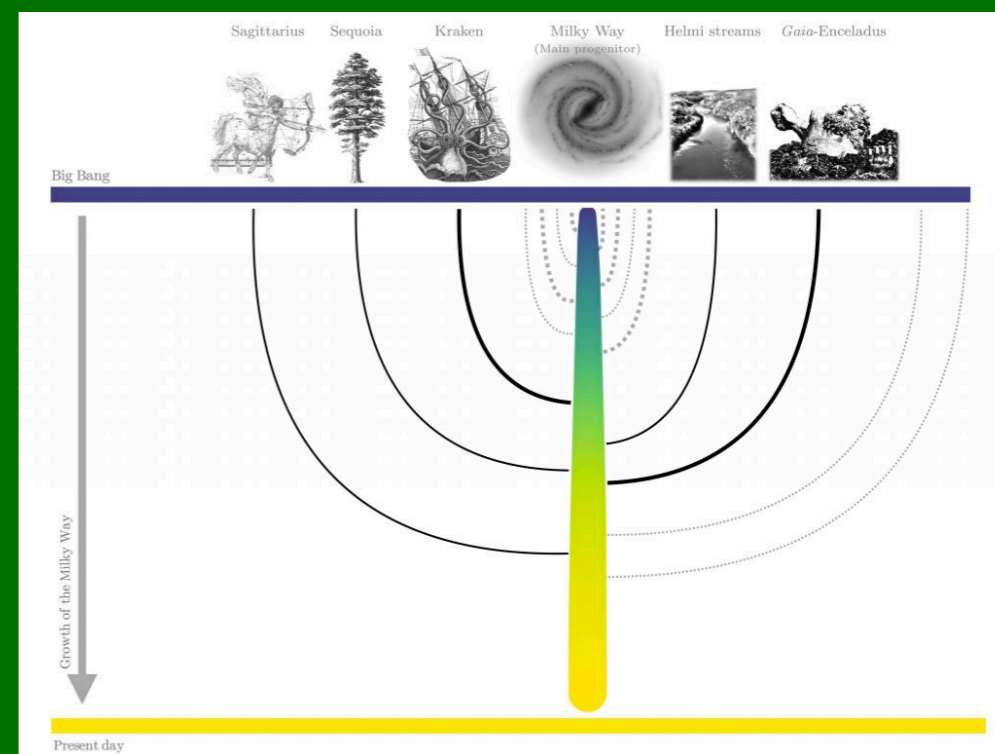


Future projects
(get in touch if interested)

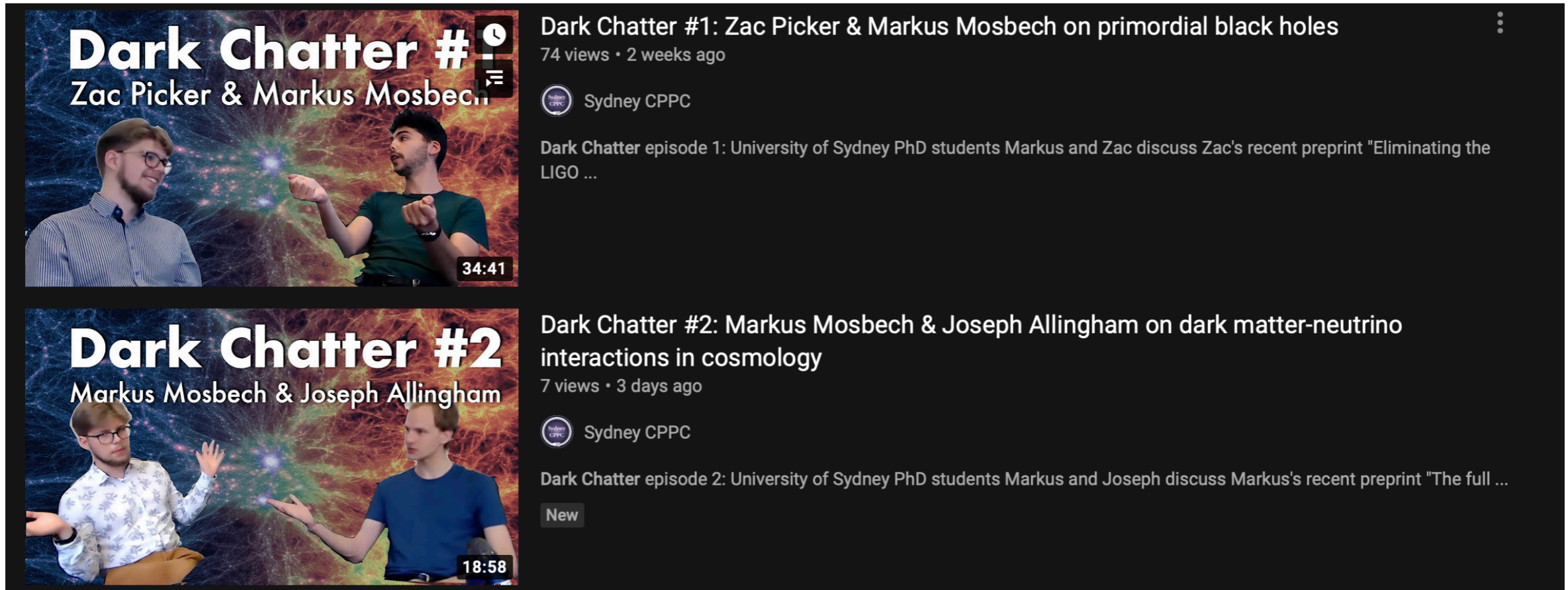
Reevaluating the neutrino floor: The neutrino "fog"



Impact of MW accretion history on DM searches: Sausages, sequoias, krakens, and more...



Advert: Dark Chatter



Dark Chatter #1
Zac Picker & Markus Mosbech
34:41

Dark Chatter #1: Zac Picker & Markus Mosbech on primordial black holes
74 views · 2 weeks ago
Sydney CPPC
Dark Chatter episode 1: University of Sydney PhD students Markus and Zac discuss Zac's recent preprint "Eliminating the LIGO ..."

Dark Chatter #2
Markus Mosbech & Joseph Allingham
18:58

Dark Chatter #2: Markus Mosbech & Joseph Allingham on dark matter-neutrino interactions in cosmology
7 views · 3 days ago
Sydney CPPC
Dark Chatter episode 2: University of Sydney PhD students Markus and Joseph discuss Markus's recent preprint "The full ..."
New

Podcast-style series of chats between PhD students/postdocs about their recent dark matter-related papers.

**Need volunteers for both interviewers and interviewees
Please contact me if you want to be involved!**