

# Dr Kyle A Oman

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Institute for Computational Cosmology  
 Department of Physics & Astronomy, Durham University  
 South Road, Durham DH1 3LE, United Kingdom

## Academic Qualifications

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<b>PhD</b>	University of Victoria, Astronomy Dissertation: “An explanation for the unexpected diversity of dwarf galaxy rotation curves” Supervisor: Julio Navarro	Aug 2017
<b>MSc</b>	University of Waterloo, Physics Dissertation: “Probing the environmental dependence of star formation in satellite galaxies using orbital kinematics” Supervisor: Michael Hudson	Aug 2013
<b>BSc</b>	University of Waterloo, Honours Physics (Astrophysics spec.) Graduated on Dean's Honour List Dissertation: “An object-oriented halo finder” Supervisor: Michael Balogh	Jun 2011

## Employment

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Assoc. Professor & Royal Society Dorothy Hodgkin Fellow Institute for Computational Cosmology & Centre for Extragalactic Astronomy, Durham University	Jul 2024 – present
Asst. Professor & Royal Society Dorothy Hodgkin Fellow Institute for Computational Cosmology & Centre for Extragalactic Astronomy, Durham University	Oct 2023 – Jun 2024
Senior postdoctoral research associate Institute for Computational Cosmology, Durham University	Jul 2022 – Sept 2023
Postdoctoral research associate Institute for Computational Cosmology, Durham University	Oct 2019 – Jun 2022
Researcher (postdoctoral) Kapteyn Astronomical Institute, Rijksuniversiteit Groningen	Oct 2017 – Sept 2019
Summer research internship Department of Physics & Astronomy, University of Waterloo	May 2010 – Aug 2010
Summer research internship Department of Physics & Astronomy, University of Waterloo	May 2009 – Aug 2009

## Grants, Computing Time & Funding

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DiRAC 16 <sup>th</sup> RAC call for proposals (274M cpu-hr) <i>Title: “Virgo I: The formation, evolution and clustering of galaxies”</i> <i>Role: co-I</i>	2024 – 2027
Matariki Network of Universities Seed Fund (GBP 24 950) <i>Title: “The SWAN Universe: Simulations for Wallaby and the nearby Universe”</i> <i>Role: co-I, Durham University lead</i>	2024 – 2026
Durham STFC Impact Acceleration Account (GBP 17 156) <i>Title: “Human mobility for natural disaster risk management with astrophysics techniques”</i> <i>Role: co-PI (with A. Dunant)</i>	2024
Royal Society Dorothy Hodgkin Fellowship (GBP 1.5M) <i>Title: “Key dark matter particle properties from dwarf galaxy astrophysics”</i>	2023 – 2031
DiRAC-3 Phase 2 Director’s Discretionary Time (8.84M cpu-hr) <i>Title: “Simulated 21-cm survey of the Southern sky”</i>	2023 – 2024
Cosmology and Astroparticle Student & Postdoc Exchange Network Visitor (GBP 1 400) <i>Title: “Structure and equilibrium of simulated dwarf galaxies”</i>	2022
Durham University Physics Department Developing Talent Award (GBP 4 000) <i>Title: “The fragility of dwarf galaxies used as dark matter tracers”</i>	2022

## Scholarships & Awards

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Durham University Discretionary Award GBP 500, Institution-level, award by nomination	2023
Durham University Discretionary Award GBP 1 000, Institution-level, award by nomination	2022
RM Petrie Memorial Fellowship CAD 4 750, Institution-level, award by nomination	2016 – 2017
University of Victoria President’s Research Scholarship CAD 4 000, Institution-level, award by nomination	2016
National Science and Engineering Research Council Canada Graduate Scholarship with Michael Smith Foreign Study Supplement CAD 76 000, National-level, top Canadian graduate research scholarship <i>Title: “Remaining challenges to the standard model of cosmology: a solution to the cusp-core problem”</i>	2015 – 2016
University of Victoria Graduate Award CAD 6 000, Institution-level, award by nomination	2014 – 2015
Nora and Mark DeGoutière Memorial Scholarship CAD 11 250, Institution-level, award by nomination	2014

University of Victoria Fellowship CAD 15 000, Institution-level, award by nomination	2013
Queen Elizabeth II Graduate Scholarship in Science and Technology CAD 15 000, Provincial-level, research scholarship <i>Title: “Deconstructing Star Formation Histories from Orbits in N-Body Simulations”</i>	2012
National Science and Engineering Research Council Undergraduate Student Research Award CAD 4 500, National-level, summer research scholarship	2009

## Research student supervision

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I have co-supervised the thesis work of 10 students (3 BSc, 6 MSc/MPhys, 1 PhD).

MPhys thesis co-supervisor (with M. Swinbank) for Brad Makinson Institute for Computational Cosmology, Durham University	Oct 2024 – Apr 2025
MPhys thesis co-supervisor (with M. Swinbank) for Jack Carter Institute for Computational Cosmology, Durham University	Oct 2024 – Apr 2025
Summer research placement supervisor for Loretta Lanigan Institute for Computational Cosmology, Durham University	July 2024 – Aug 2024
Summer undergraduate research project supervisor for Mary Carstairs Institute for Computational Cosmology, Durham University	July 2024 – Aug 2024
Summer Nuffield Foundation Research Placement Host for Matilda Hunnisett Institute for Computational Cosmology, Durham University	Aug 2023
Summer Nuffield Foundation Research Placement Host for Piotr Stelmaszczyk Institute for Computational Cosmology, Durham University	Aug 2023
MPhys thesis co-supervisor (with M. Swinbank) for Lauryn Tapper Institute for Computational Cosmology, Durham University <i>“A dynamic analysis of the gas within simulated galaxies”</i>	Oct 2022 – present
Summer undergraduate research project supervisor for Eleanor Downing Institute for Computational Cosmology, Durham University <i>“The diverse perturbations affecting dwarf galaxies used as dark matter tracers”</i>	Jul – Sept 2022
MPhys thesis co-supervisor (with A. Fattahi) for Alex Cooke Institute for Computational Cosmology, Durham University <i>“The lives and deaths of faint satellite galaxies”</i>	Oct 2021 – Apr 2022
MPhys thesis co-supervisor (with C. Frenk) for Richard Brooks Institute for Computational Cosmology, Durham University <i>“A path to revealing the nature of dark matter by neutral gas”</i>	Oct 2021 – Apr 2022
PhD thesis co-supervisor (with R. Massey, C. Frenk) for Ellen Sirks Institute for Computational Cosmology, Durham University	Jan 2020 – Oct 2022

Summer Nuffield Foundation Research Placement Host for Jared Turnbull Institute for Computational Cosmology, Durham University <i>“Visualisations of Simulated Galaxies”</i>	Aug 2021
MPhys thesis co-supervisor (with C. Frenk) for Finn Roper Institute for Computational Cosmology, Durham University <i>“The effect of baryon feedback on simulated dark matter distributions”</i>	Jun 2020 – Apr 2021
MSc thesis co-supervisor (with M. Verheijen) for Anatolii Zadvornyi Kapteyn Institute, Rijksuniversiteit Groningen <i>“Star formation suppression, gas consumption and stripping in cluster satellites”</i>	Sept 2019 – Jul 2021
MSc thesis co-supervisor (with S. Trager) for Amit Upadhyay Kapteyn Institute, Rijksuniversiteit Groningen <i>“Star formation histories of Coma Cluster galaxies matched to simulated orbits hints at quenching around first pericentre”</i>	Sept 2018 – Aug 2020
BSc thesis co-supervisor (with M. Verheijen) for Anatolii Zadvornyi Kapteyn Astronomical Institute, Rijksuniversiteit Groningen <i>“Environmental star formation suppression in galaxy clusters”</i>	Jan 2019 – May 2019
BSc thesis co-supervisor (with J. Navarro, A. Fattahi) for James Lane Department of Physics & Astronomy, University of Victoria <i>“The mysterious progenitor of the Ophiuchus stream”</i>	Sept 2016 – Apr 2017
BSc thesis co-supervisor (with J. Navarro) for Patrick McManus Department of Physics & Astronomy, University of Victoria <i>“The effect of an impulsive gravitational perturbation on a dark matter halo”</i>	Sept 2016 – Apr 2017

## Teaching Experience

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Course development	May – Aug 2015 <i>Produced new draft of laboratory manual for University of Victoria undergraduate introductory astronomy course, in use as of Fall 2016. Development of visualization software for use in same course.</i>
Substitute lecturer	<i>Lectures for courses “Introduction to astronomy; Cosmic history” (Feb-Mar 2023, instructor C. Frenk), “Introduction to galaxies” (Mar 2017, instructor J. Navarro).</i>
Guest lecturer	<i>Lectures for courses “Representation of time travel in popular culture” (May 2014, Dept. Fine Arts, instructor J. Threlfall), “Life in the Universe” (Mar 2015, Mar 2016, Dept. Physics &amp; Astronomy, instructor J. Willis).</i>

Teaching Assistantships – 11 appointments totalling 45 months 2010 – 2022  
*Variously: demonstration and grading for introductory physics and astronomy laboratory courses; guided problem solving sessions and grading for introductory engineering courses; grading for physics and astronomy courses; demonstration and grading for MSc scientific computing course.*

## Publications

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I am an author of 60 refereed articles (5658 citations, H=32), of which 10 as the first author (847 citations), and a further 22 in which I had a major role. An up-to-date list is [available on NASA ADS](#). I have highlighted some of my best work with a ★. Papers led by students under my supervision are marked with a †.

### Pre-prints

1. Riley, Shipp, Simpson, Bieri, Fattahi, Brown, **Oman**, Fragkoudi, Gómez, Grand and Marinacci (2024). *Auriga Streams I: disrupting satellites surrounding Milky Way-mass haloes at multiple resolutions*. MNRAS, submitted. [arxiv:2410.09144]
2. Amvrosiadis, Lange, Nightingale, He, Frenk, **Oman**, Smail, Swinbank, Fragkoudi, Gadotti, Cole, Borsato, Robertson, Massey, Cao and Li (2024). *The onset of bar formation in a massive galaxy at  $z \sim 3.8$* . MNRAS, submitted. [arxiv:2404.01918]

### Refereed publications in primary journals

3. Maccagni, de Blok, Mancera Piña, Ragusa, Iodice, Spavone, McGaugh, **Oman**, Oosterloo, Koribalski, Adams, Amram, Bosma, Bigiel, Brinks, Chemin, Combes, Gibson, Healy, Holwerda, Józsa, Kamphuis, Kleiner, Kurapati, Marasco, Spekkens, Veronese, Walter, Zabel and Zijlstra (2024). *MHONGOOSE discovery of a gas-rich low-surface brightness galaxy in the Dorado Group*. A&A 690: 69. [arxiv:2405.17000]
4. De Blok, Healy, Maccagni, Pisano, Bosma, English, Jarrett, Marasco, Meurer, Veronese, Bigiel, Chemin, Fraternali, Holwerfa, Kamphuis, Klöckner, Kleiner, Leroy, Mogotsi, **Oman**, Schinnerer, Verdes-Montenegro, Westmeier, Wong, Zabel, Amram, Carignan, Combes, Brinks, Dettmar, Gibson, Jozsa, Koribalski, McGaugh, Oosterloo, Spekkens, Schröder, Adams, Athanassoula, Bershad, Beswick, Blyth, Elson, Frank, Heald, Henning, Kurapati, Loubser, Lucero, Meyer, Namumba, Oh, Sardone, Sheth, Smith, Sorgho, Walter, Williams, Woudt and Zijlstra (2024). *MHONGOOSE – A MeerKAT Nearby Galaxy HI Survey*. A&A 688: A109. [arxiv:2404.01774]
5. **Oman**, Frenk, Crain, Lovell and Pfeffer (2024). *A warm dark matter cosmogony may yield more low-mass galaxy detections in 21-cm surveys than a cold dark matter one*. MNRAS 533: 67. [arxiv:2401.11878]
6. Brown, Fattahi, McCarthy, Font, **Oman** and Riley (2024). *ARTEMIS emulator: exploring the effect of cosmology and galaxy formation physics on Milky Way-mass haloes and their satellites*. MNRAS 532: 1223. [arxiv:2403.11692]
7. **Oman** and Riley (2024). *An overlooked source of uncertainty in the mass of the Milky Way*. MNRAS Letters 532: 48. [arxiv:2404.03726]

8. Jones, Sand, Karunakaran, Spekkens, **Oman**, Bennet, Besla, Crnojević, Cuillandre, Fielder, Gwyn and Mutlu-Pakdil (2023). *Gas and star formation in satellites of Milky Way analogs*. ApJ 966: 93. [arxiv:2311.02152]
9. † Sirks, Harvey, Massey, **Oman**, Robertson, Frenk, Everett, Gill and McCleary (2023). *Hydrodynamical simulations of merging galaxy clusters: giant dark matter particle colliders, powered by gravity*. MNRAS 530: 3160. [arxiv:2405.00140]
10. Puglisi, Dudzevičiūtė, Swinbank, Gillman, Tiley, Cirasuolo, Cortese, Glazebrook, Harrison, Ibar, Molina, Obreschkow, **Oman**, Schaller, Shankar and Sharples (2023). *KURVS: The outer rotation curve shapes and dark matter fractions of  $z \sim 1.5$  star-forming galaxies*. MNRAS 524: 2814. [arxiv:2305.04382]
11. † Brooks, **Oman** and Frenk (2023). *The North-South asymmetry of the ALFALFA HI velocity width function*. MNRAS 522: 4043. [arxiv:2211.08092]
12. † Downing and **Oman** (2023). *The many reasons that the rotation curves of low-mass galaxies can fail as tracers of their matter distributions*. MNRAS 522: 3318. [arxiv:2301.05242]
13. Reeves, Hudson and **Oman** (2023). *Constraining satellite quenching timescales in galaxy clusters by forward-modelling stellar ages and quiescent fractions in projected phase space*. MNRAS 522: 1779. [arxiv:2211.09145]
14. † Roper, **Oman**, Frenk, Benítez-Llambay, Navarro and Santos-Santos (2023). *The diversity of rotation curves of simulated galaxies with cusps and cores*. MNRAS 521: 1316. [arxiv:2203.16652]
15. Astropy Collaboration: Price-Whelan, Lim, Earl, Starkman, Bradley, Shupe, Patil, Corrales, Brasseur, Nöthe, Donath, Tollerud, Morris, Ginsburg, Vahern Weaver, Tocknell, Jamieson, van Kerkwijk, Robitaille, Merry, Bachetti, and paper authors: Aldcroft, Alvaro-Montes, Archibald, Bódi, Bapat, Barentsen, Bazán, Biswas, Boquien, Burke, Cara, Cara, Conroy, Conseil, Craig, Cross, Cruz, D'Eugenio, Dencheva, Devillepoix, Dietrich, Eigenbrot, Erben, Ferreira, Foreman-Mackey, Fox, Freij, Garg, Geda, Glattly, Gondhalekar, Gordon, Grant, Greenfield, Groener, Guest, Gurovich, Handberg, Hart, Hatfield-Dodds, Homeier, Hosseinzadeh, Jenness, Jones, Joseph, Kalmbach, Karamahmetoglu, Kałuszyński, Kelley, Kern, Kerzendorf, Kock, Kulumani, Lee, Ly, Ma, MacBride, Maljaars, Muny, Murphy, Norman, O'Steen, **Oman**, Pacifici, Pascual, Pascual-Granado, Patil, Perren, Pickering, Rastogi, Roulston, Ryan, Rykoff, Sabater, Sakurikar, Salgado, Sanghi, Saunders, Savchenko, Schwardt, Seifert-Eckert, Shih, Jain, Shukla, Sick, Simpson, Singanamalla, Singer, Singhal, Sinha, Sipőcz, Spitler, Stansby, Streicher, Šumak, Swinbank, Taranu, Tewary, Tremblay, de Val-Borro, van Kooten, Vasović, Verma, de Miranda Cardoso, Williams, Wilson, Winkel, Wood-Vasey, Xue, Yoachim, Zhang and Zonca (2022). *The Astropy project: Sustaining and growing a community-oriented open-source project and the latest major release (v5.0) of the core package*. ApJ 935: 167. [arxiv:2206.14220]
16. Bilimogga, **Oman**, Verheijen and van der Hulst (2021). *Using EAGLE simulations to study the effect of observational constraints on determination of HI asymmetries in galaxies*. MNRAS 513: 5310. [arxiv:2205.00675]

17. Mancera-Piña, Fraternali, Oosterloo, Adams, **Oman** and Leisman (2022). *No need for dark matter: resolved kinematics of the ultra-diffuse galaxy AGC 114905*. MNRAS 512: 3230. [arxiv:2112.00017]
18. † Sirks, **Oman**, Robertson, Massey and Frenk (2021). *The effects of self-interacting dark matter on the stripping of galaxies that fall into clusters*. MNRAS 511: 5927. [arxiv:2109.03257]
19. **Oman** (2022). *The ALFALFA HI velocity width function*. MNRAS 509: 3268. [arxiv:2108.08856]
20. Karunakaran, Spekkens, **Oman**, Simpson, Fattahi, Sand, Bennet, Crnojević, Frenk, Gómez, Grand, Jones, Marinacci, Mutlu-Pakdil, Navarro and Zaritsky (2021). *Satellites around Milky Way analogs: Tension in the number and fraction of quiescent satellites seen in observations versus simulations*. ApJ 916: 19. [arxiv:2105.09321]
21. † Upadhyay, **Oman** and Trager (2021). *Star formation histories of Coma Cluster galaxies matched to simulated orbits hint at quenching around first pericenter*. A&A 652: A16. [arxiv:2104.04388]
22. Brouwer, **Oman**, Valentijn, Bilicki, Heymans, Hoekstra, Napolitano, Roy, Tortora, Wright, Asgari, van den Busch, Dvornik, Erben, Giblin, Graham, Hildebrandt, Hopkins, Kannawadi, Kuijken, Liske, Shan, Tröster and Visser (2021). *The weak lensing radial acceleration relation: Constraining modified gravity and cold dark matter theories with KiDS-1000*. A&A 650: A113. [arxiv:2106.11677]
23. Board, Bozorgnia, Strigari, Grand, Fattahi, Frenk, Marinacci, Navarro and **Oman** (2021). *Velocity-dependent J-factors for annihilation radiation from cosmological simulations*. JCAP 2021-04: 70. [arxiv:2101.06284]
24. ★ **Oman**, Bahé, Healy, Hess, Hudson and Verheijen (2021). *A homogeneous measurement of the delay between the onsets of gas stripping and star formation quenching in satellite galaxies of groups and clusters*. MNRAS 501: 5073. [arxiv:2009.00667]
25. Deason, **Oman**, Fattahi, Schaller, Jauzac, Zhang, Montes, Bahé, Dalla Vecchia, Kay and Evans (2020). *Stellar splashback: the edge of the intracluster light*. MNRAS 500: 4181. [arxiv:2010.02937]
26. Genina, Read, Frenk, Cole, Benítez-Llambay, Ludlow, Navarro, **Oman** and Robertson (2020). *To beta or not to beta: can higher-order Jeans analysis break the mass-anisotropy degeneracy in simulated dwarfs?* MNRAS 498: 144. [arxiv:1911.09124]
27. Deason, Fattahi, Frenk, Grand, **Oman**, Garrison-Kimmel, Simpson and Navarro (2020). *The edge of the Galaxy*. MNRAS 496: 3929. [arxiv:2002.09497]
28. Mancera-Piña, Fraternali, **Oman**, Adams, Bacchini, Marasco, Oosterloo, Pezzulli, Posti, Leisman, Cannon, di Teodoro, Gault, Haynes, Reiter, Rhode, Salzer and Smith (2020). *Robust HI kinematics of gas-rich ultra-diffuse galaxies: hints of a weak-feedback formation scenario*. MNRAS 495: 3636. [arxiv:2004.14392]

29. Marasco, Posti, **Oman**, Famaey, Cresci and Fraternali (2020). *Massive disc galaxies in cosmological hydrodynamical simulations are too dark matter-dominated*. A&A, 883: L33. [arxiv:2005.01724]
30. ★ Santos-Santos, Navarro, Robertson, Benítez-Llambay, **Oman**, Lovell, Frenk, Ludlow, Fattahi and Ritz (2020). *Baryonic clues to the puzzling diversity of dwarf galaxy rotation curves*. MNRAS 495: 58. [arxiv:1911.09116]
31. Cautun, Benítez-Llambay, Deason, Frenk, Fattahi, Gómez, Grand, **Oman**, Navarro and Simpson (2020). *The Milky Way total mass profile as inferred from Gaia DR2*. MNRAS 494: 4291. [arxiv:1911.04557]
32. Richings, Frenk, Jenkins, Robertson, Fattahi, Grand, Navarro, Pakmor, Gómez, Marinacci and **Oman** (2020). *Subhalo destruction in the APOSTLE and Auriga simulations*. MNRAS 492: 5780. [arxiv:1811.12437]
33. † Lane, Navarro, Fattahi, **Oman** and Bovy (2020). *The Ophiuchus stream progenitor: a new type of globular cluster and its possible Sagittarius connection*. MNRAS 492: 4164. [arxiv:1905.12633]
34. Chauhan, Lagos, Obreschkow, Power, **Oman** and Elahi (2019). *The HI velocity function: a test of cosmology or baryon physics?* MNRAS 488: 5898. [arxiv:1906.06130]
35. Genina, Frenk, Benítez-Llambay, Cole, Navarro, **Oman** and Fattahi (2019). *The distinct stellar metallicity populations of simulated Local Group dwarfs*. MNRAS 488: 2312. [arxiv:1812.04839]
36. Bose, Frenk, Jenkins, Fattahi, Gomez, Grand, Marinacci, Navarro, **Oman**, Pakmor, Schaye, Simpson and Springel (2019). *No cores in dark matter-dominated dwarf galaxies with bursty star formation histories*. MNRAS, 486: 4790. [arxiv:1810.03635]
37. Owers, Hudson, **Oman**, Bland-Hawthorn, Brough, Bryant, Cortese, Couch, Croom, van de Sande, Federrath, Groves, Hopkins, Lawrence, Lorente, McDermid, Medling, Richards, Scott, Taranu, Welker and Yi (2019). *The SAMI Galaxy Survey: Quenching of star formation in clusters I. Transition galaxies*. ApJ 873: 52. [arxiv:1901.08185]
38. ★ **Oman**, Marasco, Navarro, Frenk, Schaye and Benítez-Llambay (2019). *Non-circular motions and the diversity of dwarf galaxy rotation curves*. MNRAS 482: 821. [arxiv:1706.07478]
39. Digby, Navarro, Fattahi, Simpson, **Oman**, Gomez, Frenk, Grand and Pakmor (2018). *The star formation histories of dwarf galaxies in Local Group cosmological simulations*. MNRAS 485: 5423. [arxiv:1812.04839]
40. Mancera-Piña, Fraternali, Adams, Marasco, Oosterloo, **Oman**, Leisman, di Teodoro, Posti, Battipaglia, Cannon, Gault, Haynes, Janowiecki, McAllan, Pagel, Reiter, Rhode, Salzer and Smith (2019). *Off the baryonic Tully-Fisher relation: a population of baryon-dominated ultra-diffuse galaxies*. ApJL 883: 33. [arxiv:1909.01363]
41. Fattahi, Navarro, Frenk, **Oman**, Sawala and Schaller (2018). *Tidal stripping and the structure of dwarf galaxies in the Local Group*. MNRAS 476: 3816. [arxiv:1707.03898]



42. Navarro, Yozin, Loewen, Benítez-Llambay, Fattahi, Frenk, **Oman**, Schaye and Theuns (2018). *The innate origin of radial and vertical gradients in a simulated galaxy disc*. MNRAS 476: 3648. [arxiv:1709.01040]
43. Marasco, **Oman**, Navarro, Frenk and Oosterloo (2018). *Bars in dark-matter-dominated dwarf galaxy discs*. MNRAS 476: 2168. [arxiv:1711.09914]
44. Genina, Benítez-Llambay, Frenk, Cole, Fattahi, Navarro, **Oman**, Sawala and Theuns (2018). *The core-cusp problem: a matter of perspective*. MNRAS 474: 1398. [arxiv:1707.06303]
45. Navarro, Benítez-Llambay, Fattahi, Frenk, Ludlow, **Oman**, Schaller and Theuns (2017). *The origin of the mass discrepancy-acceleration relation in  $\Lambda$ CDM*. MNRAS 471: 1841. [arxiv:1612.06329]
46. Campbell, Frenk, Jenkins, Eke, Navarro, Sawala, Schaller, Fattahi, **Oman** and Theuns (2017). *Knowing the unknowns: uncertainties in simple estimators of dynamical masses*. MNRAS 469: 2335. [arxiv:1603.04443]
47. Wang, Fattahi, Cooper, Sawala, Strigari, Frenk, Navarro, **Oman** and Schaller (2017). *Tidal features of classical Milky Way satellites in a  $\Lambda$  cold dark matter universe*. MNRAS 468: 4887. [arxiv:1611.00778]
48. Sawala, Pihajoki, Johansson, Frenk, Navarro, **Oman** and White (2017). *Shaken and stirred: The Milky Way's dark substructures*. MNRAS 467: 4383. [arxiv:1609.01718]
49. Ludlow, Benítez-Llambay, Schaller, Theuns, Frenk, Bower, Schaye, Crain, Navarro, Fattahi and **Oman** (2017). *The Mass-discrepancy acceleration relation: a natural outcome of galaxy formation in CDM halos*. Phys Rev Lett 118: 161103. [arxiv:1610.07663]
50. Benítez-Llambay, Navarro, Frenk, Sawala, **Oman**, Fattahi, Schaller, Schaye, Crain and Theuns (2017). *The properties of “dark” LCDM haloes in the Local Group*. MNRAS 465: 3913. [arxiv:1609.01301]
51. Starkenburg, **Oman**, Navarro, Crain, Fattahi, Frenk, Sawala and Schaye (2017). *The oldest and most pristine stars in the APOSTLE Local Group simulations*. MNRAS 465: 2212. [arxiv:1609.05214]
52. Sales, Navarro, **Oman**, Fattahi, Ferrero, Abadi, Bower, Crain, Frenk, Sawala, Schaller, Schaye, Theuns and White (2016). *The low-mass end of the baryonic Tully-Fisher relation*. MNRAS 464: 2419. [arxiv:1602.02155]
53. **Oman** and Hudson (2016). *Satellite quenching timescales in clusters from projected phase space measurements matched to simulated orbits*. MNRAS, 463: 3083. [arxiv:1607.07934]
54. Schaller, Frenk, Fattahi, Navarro, **Oman** and Sawala (2016). *The low abundance and insignificance of dark discs in simulated Milky Way galaxies*. MNRAS 461: L56. [arxiv:1605.02770]
55. **Oman**, Navarro, Sales, Fattahi, Frenk, Sawala, Schaller and White (2016). *Missing dark matter in dwarf galaxies?* MNRAS 460: 3610. [arxiv:1601.01026]
56. Sawala, Frenk, Fattahi, Navarro, Bower, Crain, Dalla Vecchia, Furlong, Helly, Jenkins, **Oman**, Schaller, Schaye, Theuns, Trayford and White (2016). *The APOSTLE simulations: solutions to the Local Group's cosmic puzzles*. MNRAS 457: 1931. [arxiv:1511.01098]

57. Fattahi, Navarro, Sawala, Frenk, **Oman**, Crain, Furlong, Schaller, Schaye, Theuns and Jenkins (2016). *The APOSTLE project: Local Group kinematic mass constraints and simulation candidate selection*. MNRAS 457: 844. [arxiv:1507.03643]
58. ★ **Oman**, Navarro, Fattahi, Frenk, Sawala, White, Bower, Crain, Furlong, Schaller, Schaye and Theuns (2015). *The unexpected diversity of dwarf galaxy rotation curves*. MNRAS. 452: 3650. [arxiv:1504.01437]
59. Taranu, Hudson, Balogh, Smith, Power, **Oman**, Krane (2014). *Quenching star formation in cluster galaxies*. MNRAS 440: 1934. [arxiv:1211.3411]
60. **Oman**, Hudson and Behroozi (2013). *Disentangling satellite galaxy populations using orbit tracking in simulations*. MNRAS 431: 2307. [arxiv:1301.6757]

#### Other refereed publications

61. **Oman** (2024). *MARTINI: Mock Array Radio Telescope Interferometry of the Neutral ISM*. JOSS 9: 6860. [arxiv:2406.05574]
62. **Oman**, Starkenburg and Navarro (2018). *The “building blocks” of stellar haloes*. Galaxies 5: 33. [arxiv:1708.00929]

#### Non-refereed publications & software

63. Read, Steger, Walker, Genina, Frenk, Cole, Benítez-Llambay, Ludlow, Navarro, **Oman**, Robertson, Collins, Ibata, Rich, Martin, Peñarrubia, Chapman, Tollerud and Weisz (2023). *GravSphere: Jeans modelling code*. Astrophysics Source Code Library 2312.009.
64. **Oman**, Brouwer, Ludlow and Navarro (2020). *Observational constraints on the slope of the radial acceleration relation at low accelerations*. [arxiv:2006.06700]
65. **Oman** (2019). *MARTINI: Mock spatially resolved spectral line observations of simulated galaxies*. Astrophysics Source Code Library 1911.005.
66. **Oman** (2017). *The APOSTLE simulations: Rotation curves derived from synthetic 21-cm observations*. Rediscovering our Galaxy, Proceedings of the IAU Symposium 334: 213. [arXiv: 1712.02562]
67. Fattahi, Navarro, Sawala, Frenk, Sales, **Oman**, Schaller and Wang (2016). *The cold dark matter content of Galactic dwarf spheroidals: no cores, no failures, no problem*. [arxiv:1607.06479]
68. Sawala, Frenk, Fattahi, Navarro, Bower, Crain, Dalla Vecchia, Furlong, Helly, Jenkins, **Oman**, Schaller, Schaye, Theuns, Trayford and White (2014). *Local Group galaxies emerge from the dark*. [arxiv:1412.2748]

#### Conferences and Workshops

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Invited talk at IAUGA 2024/FM 9 “Measures of luminous and dark matter in galaxies across time” CTICC, Cape Town, South Africa	Aug 2024
Invited plenary talk at IAUGA 2024/IAUS 392 “Neutral hydrogen in and around galaxies in the SKA era” CTICC, Cape Town, South Africa	Aug 2024
SOC at “Small galaxies, cosmic questions II” Durham University, Durham, United Kingdom	Aug 2024

*Curriculum Vitae – Dr Kyle A Oman*

Contributed talk at “Towards unified sub-grid prescriptions for galaxy modelling” Lorentz Centre, Leiden, The Netherlands	Sept 2023
Contributed talk at “FiatLux” Centro Mariapoli, Castel Gandolfo, Italy	Jun 2023
Contributed talk at “Pathfinder HI Survey Coordination Committee workshop” University of Cape Town, Cape Town, South Africa	Mar 2023
Poster at “IAUS 379: Dynamical masses of Local Group galaxies” Telegrafenberg, Potsdam, Germany	Mar 2023
Contributed talk at “Virgo meeting” Max-Planck Institute for Astrophysics, Garching, Germany	Jul 2022
Contributed talk at “EAS2022/SS8: Dwarf galaxies beyond the Local Group” Valencia Conference Centre, Valencia, Spain	Jun 2022
Poster at “EAS2022/S4: Satellite galaxies and tidal streams” Valencia Conference Centre, Valencia, Spain	Jun 2022
Invited talk at “EAS2022/SS5: Neutral hydrogen” Valencia Conference Centre, Valencia, Spain	Jun 2022
Contributed talk at “Durham Edinburgh Exchange” Virtual meeting	Jan 2022
Contributed talk at “Heraeus Seminar: Astrophysical windows on dark matter” The Royal Society, London, United Kingdom	Nov 2021
Contributed talk & 2 posters at “National Astronomy Meeting 2021” Virtual meeting	Jul 2021
SOC at “EAS2021/SS24: The role of nurture on the SF cycle in satellite galaxies” Virtual meeting	Jun 2021
Contributed talk at “Durham Edinburgh Exchange” Virtual meeting	Jan 2021
Contributed talk at “South American Dark Matter” Virtual meeting	Dec 2020
Contributed talk at “WALLABY Science Day” Virtual meeting	Nov 2020
Invited talk at “Pathfinder HI Survey Coordination Committee workshop” Virtual meeting	May 2020
Participant at “Virgo meeting” Durham University, Durham, United Kingdom	Jan 2020
Contributed talk at “Durham Edinburgh Exchange” Durham University, Durham, United Kingdom	Jan 2020

Contributed talk at “Galaxy evolution in a new era of HI surveys” Munich Institute for Astro- and Particle Physics, Munich, Germany	Aug 2019
Contributed talk at “Small galaxies, cosmic questions” Durham University, Durham, United Kingdom	Jul 2019
Contributed talk at “Computational cosmology” Lorentz Centre, Leiden, The Netherlands	Dec 2018
Participant at “Blaauw Workshop: Galaxy dynamics in the current era” Kapteyn Institute, Groningen, The Netherlands	Nov 2018
Contributed talk at “The HI/Story of the nearby Universe” Kapteyn Institute/ASTRON, Groningen, The Netherlands	Sept 2018
Contributed talk at “Tensions in the LCDM paradigm” Mainz Institute for Theoretical Physics, Mainz, Germany	May 2018
Poster at “The small-scale structure of cold(?) dark matter” Kavli Institute for Theoretical Physics, Santa Barbara, USA	Apr 2018
Contributed talk at “Virgo meeting” Max-Planck Institute for Astrophysics, Garching, Germany	Dec 2017
Invited talk at “IAUS 334: Rediscovering our Galaxy” Telegrafenberg, Potsdam, Germany	Jul 2017
Contributed talk at “On the origin of baryonic galaxy haloes” Observatorio Astronómico de Quito, Galapagos Islands, Ecuador	Mar 2017
Contributed talk at “Northwest astronomy meeting” Western Washington University, Bellingham, USA	Oct 2016
Contributed talk at “Dark matter in the Milky Way” Johannes Gutenberg University, Mainz, Germany	May 2016
Contributed talk at “Dark matter on the smallest scales” University of Leiden, Leiden, Netherlands	Apr 2016
Contributed talk at “Potsdam thinkshop XIII: Near field cosmology” Innsbruck University Centre, Obergurgl, Austria	Mar 2016
Participant at “HiPACC Summer School: AstroInformatics” University of California at San Diego, San Diego, USA	Aug 2012
Poster at “Star formation and gas reservoirs in nearby groups and clusters” Union College, Schenectady, USA	Jul 2012

### Invited Colloquia & Seminars

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Colloquium: ICRAR, University of Western Australia, Australia	Mar 2024
Colloquium: Cardiff University School of Physics & Astronomy, UK	Nov 2023
Seminar: University of Edinburgh Institute for Astronomy, UK	Nov 2022

## Curriculum Vitae – Dr Kyle A Oman

Seminar: University College London Cosmoparticle Initiative, UK	Mar 2022
Seminar: International Centre for Radio Astronomy Research, Australia	Aug 2021
Colloquium: Queen’s University Department of Physics and Astronomy, Canada	Jan 2021
Seminar: University of Nottingham School of Physics and Astronomy, UK	Dec 2020
Seminar: Oxford University Department of Physics, UK	Oct 2020
Seminar: Universidade Federal do Espírito Santo Department of Physics, Brazil	Jul 2020
Colloquium: University of Edinburgh Institute for Astronomy, UK	Feb 2020
Seminar: Deutsches Elektronen-Synchrotron DESY, Germany	Nov 2019
Seminar: University of Surrey Physics Department, UK	Sept 2017
Seminar: University of Cambridge Institute of Astronomy, UK	May 2016
Seminar: Astrophysics Institute Potsdam, Germany	Apr 2016
Seminar: University of Washington Physics & Astronomy Department, USA	Feb 2016
Seminar: University of Waterloo Physics & Astronomy Department, Canada	Dec 2014

## Public Talks & Outreach

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Public talk: Newcastle Astronomical Society	Sept 2024
Radio Astro Interviewee at IAU GA XXXIII	Aug 2024
Café Scientifique Durham speaker	May 2024
Durham Schools Science Festival demonstrator	Mar 2024
Street Cosmos at Blackhall demonstrator	Aug 2023
Ogden Centre for Fundamental Physics <i>Ogden@20</i> open day demonstrator	Nov 2022
Celebrate Science! Durham demonstrator	Oct 2022
Public talk: Sunderland Astronomical Society	Nov 2021
Nuffield Foundation research placement host for J. Turnbull	Aug 2021
Royal Society Summer Science Exhibition Workshop	Jul 2021
Public talk: Rato Bangala School Science Club, Nepal	Jul 2020
Durham ICC School visits	Jan 2020 – present
Celebrate Science! Durham demonstrator	Oct 2019
Meet the IAU astronomers! programme member	2019 – present
Public talk: RAS of Canada, Victoria chapter monthly meeting	Apr 2017
Public talk: Dominion Astrophysical Observatory summer star parties	Jul 2016

## *Curriculum Vitae – Dr Kyle A Oman*

University of Victoria Student Radio CFUV “Beyond the Jargon” interviewee	Dec 2016
Public talk: SPACE: Students in Physics and Astronomy Communication Enrichment	Jul 2016
Public talk: SPACE: Students in Physics and Astronomy Communication Enrichment	Aug 2015
University of Victoria Observatory tours for various school, youth and general public groups	2015 – 2017
Contributor of >250 physics & astrophysics answers to public questions on the PhysicsSE Q&A platform ( <a href="https://physics.stackexchange.com/users/11053/kyle-oman">physics.stackexchange.com/users/11053/kyle-oman</a> )	2013 – present

### **Professional Citizenship**

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Referee for MNRAS, ApJ, A&A, NatAs, PRL, JCAP, OJA, JOSS, Chinese Physics C	2016 – present
Durham Astronomy & Instrumentation internal mini-conference organiser	Jun 2022
Durham Physics Research Staff Consultative Committee member as co-chair: 2020 – 2023	2019 – present
Durham Astronomy PhD admissions interview panellist	2020
Durham Astronomy ICC postdoctoral representative to astronomy group	2020 – 2023
Durham Astronomy Friday seminar co-organizer	2019 – 2020
Kapteyn Institute Monday seminar co-organizer	2018 – 2019
Funding proposal reviews for UKRI/STFC (UK), SNF (Switzerland), FWO (Belgium), Conicyt (Chile)	2018
University of Victoria Physics & Astronomy graduate student association vice-chair	2014 – 2015
University of Victoria astronomy group weekly discussion meeting chair	2014 – 2015
University of Victoria graduate student representative to department	2014 – 2015
University of Waterloo undergraduate student representative to department	2008 – 2011

### **Training & professional development**

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Leadership effectiveness The Royal Society & ICL Business School	Oct 2024
Introduction to management The Royal Society & ICL Business School	Sept 2024
Getting started with doctoral supervision Durham Centre for Academic Development (DCAD)	Jan 2024

Research-informed public engagement  
DiRAC & Science Museums Group

Jul 2023

## Professional Memberships

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WALLABY survey member (Technical Working Group 1) TWG 1 co-chair: 2024 – present	2020 – present
MIGHTEE-HI survey member	2023 – present
MHONGOOSE survey member	2020 – present
SKA Cosmology Science Working Group member	2022 – present
SKA HI Galaxy Science Working Group member	2021 – present
Virgo Consortium for Cosmological Supercomputer Simulations member	2013 – present
Canadian Astronomical Society (CASCAS) Ordinary Member	2016 – 2019
International Astronomical Union (IAU) Junior Member	2018 – present
Fellow of the Royal Astronomical Society	2024 – present

## Public codes & utilities

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As lead author:

SWIFTGalaxy github.com/SWIFTSIM/swiftgalaxy	2022
MARTINI: Mock Array Radio Telescope Interferometry of the Neutral ISM github.com/kyleaoman/martini Code reviewed through PyOpenSci & published in JOSS	2019
read_eagle (python-only version) github.com/kyleaoman/pyread_eagle	2019
eagleSQLTools (python3 version) github.com/kyleaoman/eagleSqlTools	2018

As contributor:

astropy, SWIFTSimIO (co-maintainer), <sup>3D</sup>Barolo

## Languages

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English (native), French (native), Dutch (basic)

## Citizenship

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Canadian

## References

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