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

PhD	University of Victoria, Astronomy Dissertation: “An explanation for the unexpected diversity of dwarf galaxy rotation curves” Supervisor: Julio Navarro	Aug 2017
MSc	University of Waterloo, Physics Dissertation: “Probing the environmental dependence of star formation in satellite galaxies using orbital kinematics” Supervisor: Michael Hudson	Aug 2013
BSc	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

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

NSF Standard grant (USD 600 000) 2025 – 2028
Title: "Elements: Empowering high-performance remote access to adaptive particle simulation data"
Role: co-I

RAS Summer undergraduate bursary (GBP 1 200) 2025
Title: "Dark matter in low-mass galaxies"
Role: Supervisor (PI)

DiRAC 16th RAC call for proposals (274M cpu-hr) 2024 – 2027
Title: "Virgo I: The formation, evolution and clustering of galaxies"
Role: co-I

Matariki Network of Universities Seed Fund (GBP 24 950) 2024 – 2026
Title: "The SWAN Universe: Simulations for Wallaby and the nearby Universe"
Role: co-I, Durham University lead

Durham STFC Impact Acceleration Account (GBP 17 156) 2024
Title: "Human mobility for natural disaster risk management with astrophysics techniques"
Role: co-PI (with A. Dunant)

Royal Society Dorothy Hodgkin Fellowship (GBP 1.5M) 2023 – 2031
Title: "Key dark matter particle properties from dwarf galaxy astrophysics"
Role: Fellow (PI)

DiRAC-3 Phase 2 Director's Discretionary Time (8.84M cpu-hr) 2023 – 2024
Title: "Simulated 21-cm survey of the Southern sky"
Role: PI

Cosmology and Astroparticle Student & Postdoc Exchange Network Visitor (GBP 1 400) 2022
Title: "Structure and equilibrium of simulated dwarf galaxies"
Role: PI

Durham University Physics Department Developing Talent Award (GBP 4 000) 2022
Title: "The fragility of dwarf galaxies used as dark matter tracers"
Role: PI

Scholarships & Awards

Durham University Discretionary Award 2023
GBP 500, Institution-level, award by nomination

Durham University Discretionary Award 2022
GBP 1 000, Institution-level, award by nomination

RM Petrie Memorial Fellowship 2016 – 2017
CAD 4 750, Institution-level, award by nomination

University of Victoria President's Research Scholarship 2016
CAD 4 000, Institution-level, award by nomination

National Science and Engineering Research Council Canada Graduate Scholarship with Michael Smith Foreign Study Supplement 2015 – 2016
CAD 76 000, National-level, top Canadian graduate research scholarship
Title: "Remaining challenges to the standard model of cosmology: a solution to the cusp-core problem"

University of Victoria Graduate Award 2014 – 2015
CAD 6 000, Institution-level, award by nomination

Nora and Mark DeGoutière Memorial Scholarship 2014
CAD 11 250, Institution-level, award by nomination

University of Victoria Fellowship 2013
CAD 15 000, Institution-level, award by nomination

Queen Elizabeth II Graduate Scholarship in Science and Technology 2012
CAD 15 000, Provincial-level, research scholarship
Title: "Deconstructing Star Formation Histories from Orbits in N-Body Simulations"

National Science and Engineering Research Council Undergraduate Student Research Award 2009
CAD 4 500, National-level, summer research scholarship

Research supervision

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

Postdoctoral researcher Dr Katherine Harborne Feb 2025 – present
Institute for Computational Cosmology, Durham University

PhD thesis supervisor for Diego Dado Oct 2024 – present
Institute for Computational Cosmology, Durham University

Visiting PhD student Julen Expósito-Márquez Sept 2025 – Dec 2025
Institute for Computational Cosmology, Durham University

Summer undergraduate research project supervisor for Helena Chase June 2024 – Aug 2024
Institute for Computational Cosmology, Durham University

Summer undergraduate research project supervisor for Brad Makinson June 2024 – July 2024
Institute for Computational Cosmology, Durham University

MPhys thesis co-supervisor (with M. Swinbank) for Brad Makinson Oct 2024 – Apr 2025
Institute for Computational Cosmology, Durham University

MPhys thesis co-supervisor (with M. Swinbank) for Jack Carter Oct 2024 – Apr 2025
Institute for Computational Cosmology, Durham University

Summer research placement supervisor for Loretta Lanigan July 2024 – Aug 2024
Institute for Computational Cosmology, Durham University

Summer undergraduate research project supervisor for Mary Carstairs July 2024 – Aug 2024
Institute for Computational Cosmology, Durham University

Summer Nuffield Foundation Research Placement Host for Matilda Hunnisett Aug 2023
Institute for Computational Cosmology, Durham University

Summer Nuffield Foundation Research Placement Host for Piotr Stelmaszczyk Aug 2023
Institute for Computational Cosmology, Durham University

MPhys thesis co-supervisor (with M. Swinbank) for Lauryn Tapper Oct 2022 – Apr 2023
Institute for Computational Cosmology, Durham University
"A dynamic analysis of the gas within simulated galaxies"

Summer undergraduate research project supervisor for Eleanor Downing Jul – Sept 2022
Institute for Computational Cosmology, Durham University
"The diverse perturbations affecting dwarf galaxies used as dark matter tracers"

MPhys thesis co-supervisor (with A. Fattahi) for Alex Cooke Oct 2021 – Apr 2022
Institute for Computational Cosmology, Durham University
"The lives and deaths of faint satellite galaxies"

MPhys thesis co-supervisor (with C. Frenk) for Richard Brooks Oct 2021 – Apr 2022
Institute for Computational Cosmology, Durham University
"A path to revealing the nature of dark matter by neutral gas"

PhD thesis co-supervisor (with R. Massey, C. Frenk) for Ellen Sirks Jan 2020 – Oct 2022
Institute for Computational Cosmology, Durham University

Summer Nuffield Foundation Research Placement Host for Jared Turnbull Aug 2021
Institute for Computational Cosmology, Durham University
"Visualisations of Simulated Galaxies"

MPhys thesis co-supervisor (with C. Frenk) for Finn Roper Jun 2020 – Apr 2021
Institute for Computational Cosmology, Durham University
"The effect of baryon feedback on simulated dark matter distributions"

MSc thesis co-supervisor (with M. Verheijen) for Anatolii Zadvornyi Sept 2019 – Jul 2021
Kapteyn Institute, Rijksuniversiteit Groningen
"Star formation suppression, gas consumption and stripping in cluster satellites"

MSc thesis co-supervisor (with S. Trager) for Amit Upadhyay Sept 2018 – Aug 2020
Kapteyn Institute, Rijksuniversiteit Groningen
"Star formation histories of Coma Cluster galaxies matched to simulated orbits hints at quenching around first pericentre"

BSc thesis co-supervisor (with M. Verheijen) for Anatolii Zadvornyi — Jan 2019 – May 2019
Kapteyn Astronomical Institute, Rijksuniversiteit Groningen
"Enviromental star formation suppression in galaxy clusters"

BSc thesis co-supervisor (with J. Navarro, A. Fattahi) for James Lane — Sept 2016 – Apr 2017
Department of Physics & Astronomy, University of Victoria
"The mysterious progenitor of the Ophiuchus stream"

BSc thesis co-supervisor (with J. Navarro) for Patrick McManus — Sept 2016 – Apr 2017
Department of Physics & Astronomy, University of Victoria
"The effect of an impulsive gravitational perturbation on a dark matter halo"

Teaching Experience

Course development — May – Aug 2015
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.

Substitute lecturer
Lectures for courses "Introduction to astronomy; Cosmic history" (Feb-Mar 2023, instructor C. Frenk), "Introduction to galaxies" (Mar 2017, instructor J. Navarro).

Guest lecturer
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 & Astronomy, instructor J. Willis).

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

I am an author of 68 refereed articles (4084 citations excl. astropy paper, H=34), of which 10 as the first author (943 citations), and a further 23 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. Ponomareva, Mancera-Piña, Glowacki, Desmond, Jarvis, Varasteanu, Yasin, Heywood, Maddox, Adams, Baes, Gebek, Kurapati, Maksymowicz-Maciata, **Oman**, Pan, Prandoni, Rajohnson, Ruffa and Spekkens (2025). *MIGHTEE-HI: Rotation curves, mass models and dark matter properties.* MNRAS, submitted.

2. † Makinson, **Oman** and Swinbank (2025). *Multi-resolution kinematic modelling of nearby galaxies: a demonstration using MHONGOOSE observations.* MNRAS, submitted. [arxiv:2508.08841]

Refereed publications in primary journals

3. Riley, Shipp, Simpson, Bieri, Fattahi, Brown, **Oman**, Fragkoudi, Gómez, Grand and Marinacci (2025). *Auriga Streams I: distrupting satellites surrounding Milky Way-mass haloes at multiple resolutions.* MNRAS 542: 2443. [arxiv:2410.09144]

4. Namumba, Ianjamasimanana, Koribalski, Bosma, Athanassoula, Carignan, Jozsa, Kamphuis, Deane, Sikhosana, Verdes-Montenegro, Sorgho, Ndaliso, Amram, Brinks, Chemin, Combes, de Blok, Deg, English, Healy, Kurapati, Marasco, McGaugh, **Oman**, Spekkens, Veronese and Wong (2025). *Investigating the HI distribution and kinematics of ESO444-G084 and [KKS2000]23: New insights from the MHONGOOSE survey.* A&A, accepted. [arxiv:2506.04101]

5. Hank, Verheijen, Blyth, Davé, **Oman**, Deg and Glowacki (2025). *HI asymmetries in spatially resolved SIMBA galaxies.* MNRAS 540: 3047. [arxiv:2506.15827]

6. † Visser-Zadvornyi, Carstairs, **Oman** and Verheijen (2025). *Star formation and stellar & AGN feedback in the absence of accretion, not gas stripping, set the quenching timescale in satellite galaxies.* MNRAS 540: 1730. [arxiv:2503.15183]

7. O'Beirne, Staveley-Smith, Kilborn, Wong, Westmeier, Cluver, Bekki, Deg, Dénes, For, Lee-Waddell, Murugeshan, **Oman**, Rhee, Shen and Taylor (2025). *WALLABY pilot survey: properties of HI-selected dark sources and low surface brightness galaxies"*. PASA 42: 870. [arxiv:2505.04299]

8. Marasco, de Blok, Maccagni, Fraternali, **Oman**, Oosterloo, Combes, McGaugh, Kamphuis, Spekkens, Kleiner, Veronese, Amram, Chemin and Brinks (2025). *HI within and around observed and simulated galaxy discs – Comparing MeerKAT observations with mock data from TNG50 and FIRE-2*. A&A 697: 86. [arxiv:2503.03818]

9. Perron-Cormier, Deg, Spekkens, Richardson, Glowacki, Verheijen, Hank, Blyth, **Oman**, Dénes, Rhee, Elagali, Shen, Raja, Lee-Waddell and Westmeier (2025). *WALLABY pilot survey & Asymba: Comparing HI detection asymmetries to the SIMBA simulation.* AJ 169: 114. [arxiv:2501.09547]

10. 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~3.8.* MNRAS 537: 1163. [arxiv:2404.01918]

11. 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]

12. 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, Bershady, 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]

13. **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]

14. 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]

15. **Oman** and Riley (2024). *An overlooked source of uncertainty in the mass of the Milky Way.* MNRAS Letters 532: 48. [arxiv:2404.03726]

16. 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]

17. † 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]

18. 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~1.5 star-forming galaxies.* MNRAS 524: 2814. [arxiv:2305.04382]

19. † Brooks, **Oman** and Frenk (2023). *The North-South asymmetry of the ALFALFA HI velocity width function*. MNRAS 522: 4043. [arxiv:2211.08092]

20. † 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]

21. 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]

22. † 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]

23. Astropy Collaboration: Price-Whelan, Lim, Earl, Starkman, Bradley, Shupe, Patil, Corrales, Brasseur, Nöthe, Donath, Tollerud, Morris, Ginsburg, Vaherm 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, Kalmback, Karamehmetoglu, 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]

24. 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]

25. 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]

26. † 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]

27. **Oman** (2022). *The ALFALFA HI velocity width function.* MNRAS 509: 3268. [arxiv:2108.08856]

28. 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]

29. † 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]

30. 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]

31. 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]

32. ★ **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]

33. 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]

34. 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]

35. Deason, Fattahi, Frenk, Grand, **Oman**, Garrison-Kimmel, Simpson and Navarro (2020). *The edge of the Galaxy.* MNRAS 496: 3929. [arxiv:2002.09497]

36. 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]

37. 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]

38. ★ 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]

39. 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]

40. 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]

41. † 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]

42. 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]

43. 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]

44. 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]

45. Owers, Hudson, **Oman**, Bland-Hawthron, 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]

46. ★ **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]

47. 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]

48. 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]

49. 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]

50. 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]

51. Marasco, **Oman**, Navarro, Frenk and Oosterloo (2018). *Bars in dark-matter-dominated dwarf galaxy discs.* MNRAS 476: 2168. [arxiv:1711.09914]

52. 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]

53. Navarro, Benítez-Llambay, Fattahi, Frenk, Ludlow, **Oman**, Schaller and Theuns (2017). *The origin of the mass discrepancy-acceleration relation in ΛCDM.* MNRAS 471: 1841. [arxiv:1612.06329]

54. 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]

55. Wang, Fattahi, Cooper, Sawala, Strigari, Frenk, Navarro, **Oman** and Schaller (2017). *Tidal features of classical Milky Way satellites in a Λ cold dark matter universe.* MNRAS 468: 4887. [arxiv:1611.00778]

56. Sawala, Pihajoki, Johansson, Frenk, Navarro, **Oman** and White (2017). *Shaken and stirred: The Milky Way's dark substructures.* MNRAS 467: 4383. [arxiv:1609.01718]

57. 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]

58. 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]

59. 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]
60. 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]
61. **Oman** and Hudson (2016). *Satellite quenching timescales in clusters from projected phase space measurements matched to simulated orbits.* MNRAS, 463: 3083. [arxiv:1607.07934]
62. 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]
63. **Oman**, Navarro, Sales, Fattahi, Frenk, Sawala, Schaller and White (2016). *Missing dark matter in dwarf galaxies?* MNRAS 460: 3610. [arxiv:1601.01026]
64. 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]
65. 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]
66. ★ **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]
67. Taranu, Hudson, Balogh, Smith, Power, **Oman**, Krane (2014). *Quenching star formation in cluster galaxies.* MNRAS 440: 1934. [arxiv:1211.3411]
68. **Oman**, Hudson and Behroozi (2013). *Disentangling satellite galaxy populations using orbit tracking in simulations.* MNRAS 431: 2307. [arxiv:1301.6757]

Other refereed publications

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

Non-refereed publications & software

71. 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.
72. **Oman**, Brouwer, Ludlow and Navarro (2020). *Observational constraints on the slope of the radial acceleration relation at low accelerations.* [arxiv:2006.06700]
73. **Oman** (2019). *MARTINI: Mock spatially resolved spectral line observations of simulated galaxies.* Astrophysics Source Code Library 1911.005.
74. **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]

75. 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]
76. Sawala, Frenk, Fattahi, Navarro, Bower, Crain, Dalla Vecchia, Furlong, Helly, Jenkins, **Oman**, Scahller, Schaye, Theuns, Trayford and White (2014). *Local Group galaxies emerge from the dark.* [arxiv:1412.2748]

Conferences and Workshops

Contributed talk at "Pathfinder HI Survey Coordination Committee workshop" Cagliari, Italy	Sept 2025
SOC at "AstroDat" Durham University, Durham, UK	Sept 2025
Contributed talk at "NAM2025/Galaxy formation simulations at the frontier" Durham University, Durham, UK	July 2025
SOC at "SWAN Universe workshop" ICRAR UWA, Perth, Australia	Dec 2024
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
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” Jun 2022
Valencia Conference Centre, Valencia, Spain

Contributed talk at “Durham Edinburgh Exchange” Jan 2022
Virtual meeting

Contributed talk at “Heraeus Seminar: Astrophysical windows on dark matter” Nov 2021
The Royal Society, London, United Kingdom

Contributed talk & 2 posters at “National Astronomy Meeting 2021” Jul 2021
Virtual meeting

SOC at “EAS2021/SS24: The role of nurture on the SF cycle in satellite galaxies” Jun 2021
Virtual meeting

Contributed talk at “Durham Edinburgh Exchange” Jan 2021
Virtual meeting

Contributed talk at “South American Dark Matter” Dec 2020
Virtual meeting

Contributed talk at “WALLABY Science Day” Nov 2020
Virtual meeting

Invited talk at “Pathfinder HI Survey Coordination Committee workshop” May 2020
Virtual meeting

Participant at “Virgo meeting” Jan 2020
Durham University, Durham, United Kingdom

Contributed talk at “Durham Edinburgh Exchange” Jan 2020
Durham University, Durham, United Kingdom

Contributed talk at “Galaxy evolution in a new era of HI surveys” Aug 2019
Munich Institute for Astro- and Particle Physics, Munich, Germany

Contributed talk at “Small galaxies, cosmic questions” Jul 2019
Durham University, Durham, United Kingdom

Contributed talk at “Computational cosmology” Dec 2018
Lorentz Centre, Leiden, The Netherlands

Participant at “Blaauw Workshop: Galaxy dynamics in the current era” Nov 2018
Kapteyn Institute, Groningen, The Netherlands

Contributed talk at “The HI/Story of the nearby Universe” Sept 2018
Kapteyn Institute/ASTRON, Groningen, The Netherlands

Contributed talk at “Tensions in the LCDM paradigm” May 2018
Mainz Institute for Theoretical Physics, Mainz, Germany

Poster at “The small-scale structure of cold(?) dark matter” Apr 2018
Kavli Institute for Theoretical Physics, Santa Barbara, USA

Contributed talk at "Virgo meeting" Dec 2017
Max-Planck Institute for Astrophysics, Garching, Germany

Invited talk at "IAUS 334: Rediscovering our Galaxy" Jul 2017
Telegrafenberg, Potsdam, Germany

Contributed talk at "On the origin of baryonic galaxy haloes" Mar 2017
Observatorio Astronómico de Quito, Galapagos Islands, Ecuador

Contributed talk at "Northwest astronomy meeting" Oct 2016
Western Washington University, Bellingham, USA

Contributed talk at "Dark matter in the Milky Way" May 2016
Johannes Gutenburg University, Mainz, Germany

Contributed talk at "Dark matter on the smallest scales" Apr 2016
University of Leiden, Leiden, Netherlands

Contributed talk at "Potsdam thinkshop XIII: Near field cosmology" Mar 2016
Innsbruck University Centre, Obergurgl, Austria

Participant at "HiPACC Summer School: AstroInformatics" Aug 2012
University of California at San Diego, San Diego, USA

Poster at "Star formation and gas reservoirs in nearby groups and clusters" Jul 2012
Union College, Schenectady, USA

Invited Colloquia & Seminars

Seminar: University of Ghent Department of Physics & Astronomy, Belgium Jun 2025

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

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

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 *Ogden@20* 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
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 (physics.stackexchange.com/users/11053/kyle-oman)	2013 – present

Professional Citizenship

Referee for MNRAS, ApJ, A&A, NatAs, PRL, JCAP, OJA, JOSS,	2016 – present

Chinese Physics C	
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

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

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 (CASCA) Ordinary Member	2016 – 2019
International Astronomical Union (IAU) Junior Member	2018 – present
Fellow of the Royal Astronomical Society	2024 – present

Public codes & utilities

As lead author:

SWIFTGalaxy 2022
github.com/SWIFTSIM/swiftgalaxy

MARTINI: Mock Array Radio Telescope Interferometry of the Neutral ISM 2019
github.com/kyleaoman/martini
Code reviewed through PyOpenSci & published in JOSS

read_eagle (python-only version) 2019
github.com/kyleaoman/pyread_eagle

eagleSQLTools (python3 version) 2018
github.com/kyleaoman/eagleSqlTools

As contributor:

astropy, SWIFTSimIO (co-maintainer), ^{3D}Barolo

Languages

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

Citizenship

Canadian

References

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