

Oliver Newton

Curriculum Vitæ

Astrophysics Research Group
Surrey Space Centre, University of Surrey
Guildford, Surrey, GU2 7XH, UK

 **Musical-Neutron**
 **0000-0002-2769-9507**

Employment & voluntary work

Vocational

- 2026– **Marie-Skłodowska Curie Fellow**, *Astrophysics Research Group, University of Surrey, Guildford, UK.*
2022–2026 **Postdoctoral Fellow**, *Center for Theoretical Physics, Polish Academy of Sciences, Warsaw, Poland.*
2022 **PDRA (short-term)**, *Astrophysics Research Institute, Liverpool John Moores University, Liverpool, UK.*
2019–2021 **Postdoctoral researcher**, *Institut de Physique des Deux Infinis, Lyon, France.*
2014–2015 **Graduate Trading Platform Engineer**, *Fidessa, Woking, UK.*

Volunteering

- 2014–2020 **Founding trustee & Treasurer**, *UniBrass Foundation (charity number: 1159359), UK.*

Education

- 2015–2019 **PhD**, *Institute for Computational Cosmology, Durham, UK.*
Probing the nature of dark matter with small-scale cosmology
Supervisors: Prof. Adrian Jenkins and Prof. Carlos Frenk
2010–2014 **BSc MPhys**, *University of Warwick, Coventry, UK, 1st Class (Hons).*
Masters project: *Determining the fundamental properties of Higgs candidates at the LHC*

Awards and scholarships

- 2023 **International Office co-financing scheme**, Polish Academy of Sciences, Warsaw, Poland.
2019 **ICC Research Scholarship**, Institute for Computational Cosmology, Durham, UK.
2015–2019 **STFC Postgraduate Studentship**, Institute for Computational Cosmology, Durham, UK.

Invited talks and seminars

12 invited talks and seminars.

- May 2025 **Invited seminar**, Waterloo Center for Astrophysics, Canada.
Constraints on the properties of ν MSM dark matter using the satellite galaxies of the Milky Way
- Sep 2024 **Dark matter & galaxies theory seminar**, Carnegie Theoretical Astrophysics Center, Carnegie Observatories, USA.
Constraints on the properties of ν MSM dark matter using the satellite galaxies of the Milky Way
- May 2024 **Cosmology and extra-galactic astrophysics seminar**, Department of Physics and Astronomy, UCL, UK.
The formation and disruption of globular clusters in simulations of present-day L^* galaxies with controlled assembly histories
- May 2024 **HECA seminar**, Faculty of Physics, University of Warsaw, Warsaw, Poland.
Constraints on the properties of ν MSM dark matter using the satellite galaxies of the Milky Way
- Feb 2024 **Local Group (online)**, Durham, UK.
Constraining the properties of sterile neutrino DM using the satellite galaxies of the Milky Way
- Jan 2024 **CFT colloquium**, Center for Theoretical Physics, Polish Academy of Sciences, Warsaw, Poland.
Exploring the Local Group using constrained simulations
- Nov 2022 **Observatory seminar**, Astronomical Observatory, University of Warsaw, Poland.
Exploring the Local Group using constrained simulations
- Oct 2022 **Astrophysics group seminar**, Lancaster University, UK.
Exploring the Local Group using constrained simulations

- Nov 2021 **Astronomy seminar**, DTU Space, Copenhagen, Denmark.
Hermeian haloes: Field haloes that interacted with the Milky Way and M31
- June 2021 **Small-scale structure seminar (online)**, Durham, UK.
Hermeian dark matter haloes of the Local Group
- May 2021 **Stars, galaxies and cosmology café club (online)**, LAM Marseilles, France.
Hermeian dark matter haloes of the Local Group
- Nov 2020 **Local Group (online)**, Durham, UK.
Constraining the properties of WDM using the satellite galaxies of the Milky Way

Conference contributions

26 contributed talks and four posters.

Contributed talks

- Jun 2025 **European Astronomical Society meeting**, Cork, Ireland.
Constraints on the properties of ν MSM dark matter using the satellite galaxies of the Milky Way
- Jun 2025 **European Astronomical Society meeting**, Cork, Ireland.
The formation & disruption of globular clusters in simulations of L^* galaxies with controlled assembly histories
- Oct 2024 **LSST-Poland meeting**, Warsaw, Poland.
Constraints on the properties of ν MSM dark matter using the satellite galaxies of the Milky Way
- Jul 2024 **Small Galaxies, Cosmic Questions II**, Durham, UK.
Constraints on the properties of ν MSM dark matter using the satellite galaxies of the Milky Way
- Jun 2024 **CLUES Collaboration meeting**, Warsaw, Poland.
Constraints on the properties of ν MSM dark matter using the satellite galaxies of the Milky Way
- Apr 2024 **A new dawn of dwarf galaxy research workshop**, Lorentz Center, Leiden, Netherlands.
The undiscovered ultra-diffuse galaxies of the Local Group
- Oct 2023 **LSST-Poland meeting**, Warsaw, Poland.
The undiscovered ultra-diffuse galaxies of the Local Group
- Sep 2023 **Polish Astronomical Society Meeting**, Toruń, Poland.
The undiscovered ultra-diffuse galaxies of the Local Group
- June 2023 **CLUES Collaboration meeting**, Munich, Germany.
The importance of major mergers for the formation & disruption of globular clusters in present-day L^* galaxies
- May 2023 **CACTUS workshop**, London, UK.
Cosmic Web effects on small scales
- Sep 2022 **2nd Roman Juszkiewicz Symposium**, Nicolaus Copernicus Astronomical Center, Warsaw, Poland.
The undiscovered ultra-diffuse galaxies of the Local Group
- July 2022 **VIRGO Consortium meeting**, MPA Garching, Munich, Germany.
Globular clusters as tracers of galaxy mergers
- July 2022 **CLUES Collaboration meeting (online)**, Madrid, Spain.
The undiscovered ultra-diffuse galaxies of the Local Group
- Oct 2021 **Świeradów-Zdrój cosmology workshop**, Świeradów-Zdrój, Poland.
Hermeian haloes: Field haloes that interacted with the Milky Way and M31
- July 2021 **CLUES Collaboration meeting (online)**, AIP Potsdam, Germany.
Hermeian dark matter haloes of the Local Group
- July 2020 **European Astronomical Society meeting (online)**, Leiden, Netherlands.
Constraining the properties of WDM using the satellite galaxies of the Milky Way
- Jan 2020 **VIRGO Consortium meeting**, Durham, UK.
Constraining the properties of WDM using the satellite galaxies of the Milky Way
- Sep 2019 **CLUES Collaboration meeting**, IN2P3, Lyon, France.
Constraints on thermal relic WDM from satellites of the Local Group

- July 2019 **Small Galaxies, Cosmic Questions**, Durham, UK.
Constraints on the mass of the thermal relic warm dark matter particle
- Jan 2019 **DEX XV**, Edinburgh, UK.
Constraints on the mass of the thermal relic warm dark matter particle
- Dec 2018 **VIRGO Consortium meeting**, Leiden, Netherlands.
Constraints on the mass of the thermal relic warm dark matter particle
- Aug 2018 **XXX IAU General Assembly**, Vienna, Austria.
Constraining the mass of the WDM particle using estimates of the total satellite population of the Milky Way
- Jan 2018 **DEX XIV**, Durham, UK.
The total satellite population of the Milky Way
- Dec 2017 **VIRGO Consortium meeting**, MPA Garching, Munich, Germany.
The total satellite population of the Milky Way
- July 2017 **National Astronomy Meeting**, Hull, UK.
The total satellite population of the Milky Way
- Dec 2016 **VIRGO Consortium meeting**, Durham, UK.
MW satellite galaxies: how many could there be?

Posters

- Jun 2025 **European Astronomical Society meeting**, Cork, Ireland.
The formation & disruption of globular clusters in simulations of L^* galaxies with controlled assembly histories
- July 2022 **European Astronomical Society meeting**, Valencia, Spain.
The undiscovered ultra-diffuse galaxies of the Local Group
- June 2019 **EWASS**, Lyon, France.
Constraints on the mass of the thermal relic warm dark matter particle
- Aug 2018 **XXX IAU General Assembly**, Vienna, Austria.
Constraining the mass of the WDM particle using estimates of the total satellite population of the Milky Way

Supervising experience

PhD supervision

- Sep 2022– Co-supervising Feven M. Hunde
Center for Theoretical Physics, Polish Academy of Sciences

Master's supervision

- 2017–2019 Co-supervised two 4th year undergraduate students' theses
Durham University, UK

Bachelor's supervision

- 2024–2025 Jakub Możejewski: *Dark Energy and the Local Universe*
Co-supervised with Dr Mariana Jaber. Center for Theoretical Physics, PAS

Internships

- July – Sep Piotr Kuźniar, Michał Czarnowski: *The sensitivity of cosmic web filaments to cosmology*
2024 Co-supervised with Dr. Wojciech Hellwing. Center for Theoretical Physics, PAS
- Sep–Nov Szymon Bagiński: *The impact of cosmic web environment on dark matter haloes*
2023 Center for Theoretical Physics, PAS

Teaching experience

- Dec 2025 Delivered workshop entitled 'Working with CACTUS' to undergraduate and postgraduate students, postdocs, and faculty
Center for Theoretical Physics, Polish Academy of Sciences
- Sep 2022, Delivered a workshop entitled 'Working with simulation outputs in PYTHON' to postgraduate students
- Aug 2024 Center for Theoretical Physics, Polish Academy of Sciences

Professional service

Peer review

- 2024–2025 Natural Sciences and Engineering Research Council (NSERC) of Canada
2022– The Astrophysical Journal (ApJ)
2021– Journal of Cosmology and Astroparticle Physics (JCAP)

Institution

- 2022–2025 **CCG Group meeting**, Convener, CFT-PAN, Poland.
2021 **CLUES discussion meeting**, Convener, IP2I Lyon, France.
2016–2017 **Postgraduate Journal Club**, Co-convener, Durham, UK.

Conferences and meetings

- Jun 2025 **CLUES meeting 2025**, Session chair, Potsdam, Germany.
Chaired one of the talk sessions during the meeting.
2023–2024 **CLUES meeting 2024**, Chair of the LOC, Warsaw, Poland.
Oct 2023 **LSST Poland meeting**, Session chair, Warsaw, Poland.
Jun 2023 **CLUES Collaboration meeting**, Session chair, Munich, Germany.
2018–2019 **Small Galaxies, Cosmic Questions**, Member, Durham, UK.

Memberships

- Jun 2022– Junior Member of the International Astronomical Union
Oct 2019– Member CLUES Collaboration
May 2017– Fellow of the Royal Astronomical Society, UK
Oct 2015– Member Virgo Consortium

Outreach

Events & talks

- May 2023 **Invited talk**, Caterham School (Online), UK.
Introduction to Dark Matter
Oct 2018 **Celebrate Science**, Durham, UK.
Galaxy Makers
Apr 2018 **Schools Science Festival**, Durham, UK.
Galaxy Makers
Oct 2017 **Celebrate Science**, Durham, UK.
Galaxy Makers
Apr 2017 **Schools Science Festival**, Durham, UK.
Galaxy Makers
Jul 2016 **Royal Society Summer Science Exhibition**, London, UK.
Galaxy Makers

Activity development

- 2015–2016 **Galaxy Makers**, Durham, UK.
Developed design ideas and ran the constituent EAGLE volumes that were visualised in the final exhibit.

Computing

- Languages PYTHON, HPC, L^AT_EX, TCL, SQL, Microsoft Office suite
Simulations AHF, SUBFIND, GADGET, AREPO

Publications

- 2025 **Oliver Newton**, Jonathan J Davies, Joel Pfeffer, et al., The formation and disruption of globular cluster populations in simulations of present-day L* galaxies with controlled assembly histories, *MNRAS*, **542**(2):591–607, September 2025, doi: [10.1093/mnras/staf1226](https://doi.org/10.1093/mnras/staf1226)

Oliver Newton, Mark R Lovell, Carlos S Frenk, et al., Constraints on the properties of ν MSM dark matter using the satellite galaxies of the Milky Way, *MNRAS*, **541**(4):3713–3727, August 2025, doi: [10.1093/mnras/staf1223](https://doi.org/10.1093/mnras/staf1223)

Feven Markos Hunde, **Oliver Newton**, Wojciech A. Hellwing, et al., Caught in the cosmic web: Environmental effects on subhalo abundance and internal density profiles, *A&A*, **700**:A65, August 2025, doi: [10.1051/0004-6361/202452246](https://doi.org/10.1051/0004-6361/202452246)

Oliver Newton, The formation and disruption of globular cluster populations in simulations of present-day L* galaxies with controlled assembly histories - Reduced data and scripts, Zenodo, July 2025, doi: [10.5281/zenodo.16614763](https://doi.org/10.5281/zenodo.16614763)

2023 Anastasiia Osipova, Sergey Pilipenko, Stefan Gottlöber, et al., Hermeian haloes: Extreme objects with two interactions in the past, *Phys. Dark Universe*, **42**:101328, September 2023, doi: [10.1016/j.dark.2023.101328](https://doi.org/10.1016/j.dark.2023.101328)

Oliver Newton, Arianna Di Cintio, Salvador Cardona-Barrero, et al., The Undiscovered Ultradiffuse Galaxies of the Local Group, *ApJL*, **946**(2):L37, March 2023, doi: [10.3847/2041-8213/acc2bb](https://doi.org/10.3847/2041-8213/acc2bb)

Oliver Newton, HESTIA Local Group field UDG paper scripts & reduced data, Zenodo, March 2023, doi: [10.5281/zenodo.7757685](https://doi.org/10.5281/zenodo.7757685)

2022 **Oliver Newton**, Noam I Libeskind, Alexander Knebe, et al., Hermeian haloes: Field haloes that interacted with both the Milky Way and M31, *MNRAS*, **514**(3):3612–3625, August 2022, doi: [10.1093/mnras/stac1316](https://doi.org/10.1093/mnras/stac1316)

Oliver Newton, Hermeian paper plotting code, Zenodo, June 2022, doi: [10.5281/zenodo.6629724](https://doi.org/10.5281/zenodo.6629724)

Oliver Newton, Noam I. Libeskind, Alexander Knebe, et al., Hermeian galaxies: Cosmic messengers between the Milky Way and Andromeda, In *High Performance Computing in Science and Engineering*, pages 38–39, Leibniz Rechenzentrumder Bayerische Akademie der Wissenschaften, Garching, 2022

2021 Mark R Lovell, Marius Cautun, Carlos S Frenk, et al., The spatial distribution of Milky Way satellites, gaps in streams, and the nature of dark matter, *MNRAS*, **507**(4):4826–4839, November 2021, doi: [10.1093/mnras/stab2452](https://doi.org/10.1093/mnras/stab2452)

Wolfgang Enzi, Riccardo Murgia, **Oliver Newton**, et al., Joint constraints on thermal relic dark matter from strong gravitational lensing, the Ly α forest, and Milky Way satellites, *MNRAS*, **506**(4):5848–5862, October 2021, doi: [10.1093/mnras/stab1960](https://doi.org/10.1093/mnras/stab1960)

Oliver Newton, Matteo Leo, Marius Cautun, et al., Constraints on the properties of warm dark matter using the satellite galaxies of the Milky Way, *JCAP*, **2021**(08):062, August 2021, doi: [10.1088/1475-7516/2021/08/062](https://doi.org/10.1088/1475-7516/2021/08/062)

2018 **Oliver Newton**, Marius Cautun, Adrian Jenkins, et al., The total satellite population of the Milky Way, *MNRAS*, **479**(3):2853–2870, September 2018, doi: [10.1093/mnras/sty1085](https://doi.org/10.1093/mnras/sty1085)

Oliver Newton, Marius Cautun, Adrian Jenkins, et al., The Milky Way’s total satellite population and constraining the mass of the warm dark matter particle, *Proc. IAU*, **14**(S344):109–113, August 2018, doi: [10.1017/S1743921318006464](https://doi.org/10.1017/S1743921318006464)

Oliver Newton and Marius Cautun, MW Satellite LF: V1.0.0 release, Zenodo, March 2018, doi: [10.5281/zenodo.1205622](https://doi.org/10.5281/zenodo.1205622)