Henry Whitehead

✉ henry.whitehead@physics.ox.ac.uk   🌐 Department Website   ☎ +44 7826 769071

Academic History

2022-   🔖 **DPhil, University of Oxford** Astrophysics
Supervised by Prof. Bence Kocsis, studying black hole interactions in AGN discs by use of
hydrodynamic simulations

2017-2021   🔖 **MSci, University of Cambridge** Natural Sciences - First Class
Astrophysics specialisation, recipient of scholarship and two college prizes

Research Publications

1. Connar Rowan et al. "Black hole binaries in AGN accretion discs - II. Gas effects on black hole satellite scatterings". In: 527.4 (Feb. 2024), pp. 10448–10468. 🔗 DOI: 10.1093/mnras/stad3641.

2. Henry Whitehead et al. "Disc novae: thermodynamics of gas-assisted binary black hole formation in AGN discs". In: 533.2 (Sept. 2024), pp. 1766–1781. 🔗 DOI: 10.1093/mnras/stae1866. arXiv: 2312.14431 [astro-ph.HE].

3. Henry Whitehead et al. "Gas assisted binary black hole formation in AGN discs". In: 531.4 (July 2024), pp. 4656–4680. 🔗 DOI: 10.1093/mnras/stae1430. arXiv: 2309.11561 [astro-ph.GA].

4. Henry W. Whitehead and James H. Matthews. "Studying the link between radio galaxies and AGN fuelling with relativistic hydrodynamic simulations of flickering jets". In: 523.2 (Aug. 2023), pp. 2478–2497. 🔗 DOI: 10.1093/mnras/stad1582. arXiv: 2305.19328 [astro-ph.HE].

Grants & Research Scholarships

July 2024   🔖 UKRI OPP503: PI for Project APP35272 awarded 3.65 million CPUh on CSD3 (Cambridge Service for Data Driven Discovery)

Professional Activities

Referee for Monthly Notices of the Royal Astronomical Society (MNRAS)

1. Mor Rozner et al. "The formation of mini-AGN disks around IMBHs and their dynamical implications". In: *arXiv e-prints*, arXiv:2409.13805 (Sept. 2024), arXiv:2409.13805. 🔗 DOI: 10.48550/arXiv.2409.13805. arXiv: 2409.13805 [astro-ph.HE].

Conference Presentations

August 2024   🔖 *Cyclonic Winds: 3D Outflows from Black Holes Embedded in AGN Discs*,
The Origin of Black Hole Mergers, Niels Bohr Institute

December 2023   🔖 *Disc Novae: Thermodynamics of Gas Assisted Binary Black Hole Formation in AGN Discs*,
RESCEU-NBIA workshop on gravitational-wave sources, University of Tokyo

July 2023   🔖 *Gas Assisted Binary Black Hole Formation in AGN Discs*,
National Astronomy Meeting, Cardiff University

Skills and Experience

Coding	▮ Python, C, C++, CUDA, with a strong interest to improve further
Simulation	▮ Current user of Athena++, previous experience with PLUTO, MESA and Arepo
Clusters	▮ Regular user of Oxford's High Performance Computing cluster Hydra and the Cambridge Center for Data Driven Discovery's Cascade Lake
Internships	▮ 8-week research internship studying the hydrodynamics of flickering relativistic jets in AGN (2021, Institute of Astronomy, Cambridge)
	▮ 8-week research internship on the evolution of the convective envelopes of massive stars (2019, Institute of Astronomy, Cambridge)

References

Principle referee Prof. Bence Kocsis (bence.kocsis@physics.ox.ac.uk), others available upon request.