Floor van Donkelaar

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Office K23
Institute of Astronomy
University of Cambridge

Main research interests: The formation and evolution of galactic components in disc galaxies at high redshift and the role of stellar clusters by means of (cosmological) simulations.

Nationality: Dutch
Languages: Dutch (Native), English (Fluent), German (Elementary), Swedish (Elementary)

APPOINTMENTS

Herchel Smith Postdoctoral Research Fellow Oct 2025 - Present
University of Cambridge, United Kingdom
Institute of Astronomy (IoA) & Kavli Institute for Cosmology (KICC)

EDUCATION

PhD in Computational Astrophysics Sep 2021 - Sep 2025
University of Zurich, Switzerland
Thesis: Disc Galaxies and Their Components at High Redshift: Similarities with the Local Universe
Supervisor: Prof. Dr. Lucio Mayer

MSc in Astrophysics Aug 2019 - May 2021
Lund University, Sweden GPA: 3.83/4.00
Thesis: The Fate of Stars Born in Gas-Rich High Redshift Galaxies
Supervisor: Prof. Dr. Oscar Agertz

BSc in Sociotechnical Engineering, Minor in Modern Physics Sep 2016 - Jul 2019
University of Twente (ATLAS), The Netherlands GPA: 3.85/4.00
Thesis: The Star Formation Rate, Metallicity and Thermal Pressure in Galaxies at z=0.4 using MUSE
Supervisor: Dr. Kasper Borello Schmidt from *Leibzin-Institut für Astrophysik Potsdam*

GRANTS & FELLOWSHIPS

Herchel Smith Postdoctoral Research Fellowship ($\sim$ £185K) 2025

EARLY RESEARCH EXPERIENCE

Oxford University
Research Internship Jun 2020 – Nov 2020
Supervisor: Dr. Kearn Grisdale
Analyzing GMCs in the Large Magellanic Cloud with the use of N-body hydrodynamical simulations.

Leibniz-Institut für Astrophysik, Potsdam
Summer Project Jul 2017
Supervisor: Dr. Kasper Borello Schmidt
Generating template spectra of MUSE-Wide emission lines sources.

TEACHING & (PUBLIC) OUTREACH

Astrophysics Part II Supervisor, University of Cambridge
Topics in Astrophysics Lent Term 2026

Co-chair IWD 2026, University of Cambridge Dec 2025 - Present
International Women's Day (IWD) organises a series of events within the Institute of Astronomy to celebrate the achievements of women astronomers and to recognize the challenges that they still face within the field.

Reviewer for MNRAS Oct 2024 - Present

Teaching Assistant, University of Zurich

AST 202: The Universe: Contents, Origin, Evolution and Future	Spring 2025, 2024 & 2022
AST 201: Introduction to Astrobiology	Fall 2024 & 2021
AST 245: Computational Astrophysics	Fall 2024 & 2023
AST 295: Astrobiology proseminar	Fall 2023 & 2022
AST 248: The Sun and Planets	Spring 2023

Chief Public Relations, Green Team Twente Jun 2017 - Sep 2018
Led PR and design for a student team developing one of the world's most efficient hydrogen city cars. Managed branding, media, and events, contributing to winning the 2018 Shell Eco-Marathon Communication Award.

Member Faculty Council EEMCS, University of Twente Sep 2017 - Aug 2018
Advised the faculty management team on policies affecting staff and students, advocating for their interests.

Workshop developer, University of Twente May 2017 - Jun 2018
Supported and developed workshops about mentoring and the writing of personal development plans in the science track of the honours program at the University of Twente.

ADVISING & MENTORING

Master's project
Co-supervisor: Daniel Swinger (ETH)

PUBLICATION OVERVIEW

Number of (first-author) publications:	7 (6)
Number of (first-author) submissions:	1 (1)

List of Publications

1. *"Cosmic Wallflowers: The circumgalactic origins of isolated ultra-compact star clusters at $z > 7$"*, **van Donkelaar F.**, Mayer L., Capelo P. R., et al., 2026 ArXiv:2601.05333
2. *"Introducing the Phoebos simulation: galaxy properties at the dawn of galaxy formation"*, **van Donkelaar F.**, Capelo P. R., Mayer L.,et al., 2025 MNRAS, 543, 2760
3. *"In-situ formation of primordial star clusters at $z > 7$ via gaseous disc fragmentation; shedding light on the gems and on rapid black hole growth in the early Universe"*, Mayer L., **van Donkelaar F.**, Messa, M., et al., 2025, ApJL, 981, 8
4. *Exploring the fate of primordial discs in Milky Way-sized galaxies with the GigaEris simulation"*, **van Donkelaar F.**, Mayer L., Capelo P. R., et al., 2025, MNRAS, 539, 1259
5. *"Wandering intermediate-mass black holes in Milky Way-sized galaxies in cosmological simulations: myth or reality?"*, **van Donkelaar F.**, Mayer L., Capelo P. R., et al., 2025, MNRAS, 538, 2255

6. *"Stellar cluster formation in a Milky Way-sized galaxy at z>4 – II. A hybrid formation scenario for the nuclear star cluster and its connection to the nuclear stellar ring"*, **van Donkelaar F.**, Mayer L., Capelo P. R., et al., 2024, MNRAS, 529, 4104

7. *"Stellar cluster formation in a Milky Way-sized galaxy at z>4 - I. The proto-globular cluster population and the imposter amongst us"*, **van Donkelaar F.**, Mayer, L., Capelo, P. R., et al. 2023, MNRAS, 522, 1726

8. *"From giant clumps to clouds - II. The emergence of thick disc kinematics from the conditions of star formation in high redshift gas rich galaxies"*, **van Donkelaar F.**, Agertz, O., & Renaud, F. 2022, MNRAS, 512, 3806

SELECTED TALKS

A full list of the talks I have given can be found on my website.

- *'Simulating the Early Universe: Shedding Light on Clusters seen by JWST at z>4'*
  Sexten Center for Astrophysics Riccardo Giacconi, 1 Jul 2025
- *'First Results of the Phoebos Simulation: Galaxy Sizes during the Early Universe'*
  SKAO Council meeting (Zurich), 17 Mar 2025
- *'The GigaEris Simulation: What makes a high redshift (disc) galaxy different?'*
  Northwestern University, 26 Sep 2024
- *'The GigaEris Simulation: Stellar clusters in MW-sized galaxies at z>4'*
  Flatiron Institute, CCA (New York), 13 Sep 2024
- *'The GigaEris Simulation: probing the evolution of the primordial thin disc at z > 4 and stellar migration'*
  EAS Annual Meeting 2024 (Padova), 2 Jul 2024
- *'Stellar Systems at z > 4: The hybrid formation scenario for the nuclear star cluster'*
  Lund University, 8 May 2023
- *'The Formation of the Nuclear Star Cluster'*
  University of Chicago, 28 Mar 2023
- *'On disc kinematics: The influence of the thin disc on star clusters'*
  Aspen Center for Physics, 18 Mar 2022

SCIENTIFIC MEMBER

Research Associate at **Emmanuel College**, University of Cambridge	2026 - Present
Member of the HI Galaxy Science working group of **SKA**	2022 - Present

AWARDS

University College Twente Third-year Award, University College Twente	2019
More Than A Degree Awards, University of Twente	2018
Communication Award Shell Eco-Marathon, Shell	2018
University College Twente Second-year Award, University College Twente	2018

SKILLS

Programming	Python | MATLAB | SQL | C | C++
Other	LaTeX | Windows OS | Linux OS | Microsoft Office Package | Adobe Package