Floor van Donkelaar

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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 Fellow Oct 2025 - Present
University of Cambridge, United Kingdom

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 ($\sim$ £170K) 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

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
Daniel Swinger (ETH)

Bachelor's/Semester project
Daniel Swinger (ETH)

PUBLICATION OVERVIEW

Number of (first-author) publications:	6 (5)
Number of (first-author) submissions:	1 (1)

List of Publications

1. *"Introducing the Phoebos simulation: galaxy properties at the dawn of galaxy formation"*, **van Donkelaar F.**, Capelo P. R., Mayer L.,et al., arXiv:2507.04927
2. *"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
3. *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
4. *"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
5. *"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

6. *"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

7. *"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.

- *'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

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