

Dr. Constantina M. Fotopoulou Rathjen

Astrophysicist | Postdoctoral Researcher – University of Cologne

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RESEARCH INTERESTS

Structure and evolution of the turbulent, multi-phase interstellar medium · star formation and feedback on galactic scales · astrochemistry of the cold ISM · formation, structure and lifecycle of molecular clouds · hydrodynamic and magnetohydrodynamic simulations across galactic environments · synthetic observations and model development

RESEARCH EXPERIENCE

Apr. 2025 – **Postdoctoral Researcher**

present University of Cologne, Germany

Theoretical Astrophysics Group Cologne | Leader: Prof. Stefanie Walch

Position funded by the DFG Collaborative Research Centre *Habitats of Massive Stars Across Cosmic Time* (CRC 1601)

Oct. 2023 – **Researcher – Radio Communication Expert**

Mar. 2025 brown-iposs GmbH, Bonn, Germany

- Research on 6G networks: Modelled the integration of Reconfigurable Intelligent Surfaces (RIS) into networks, combining ray tracing with machine learning.
- Research on 5G networks: Developed and optimized geometric models for radio signal propagation and terrain-based simulations. Developed proprietary code for canyon effects (multi-reflections) modelling.

Jan. 2023 – **Postdoctoral Researcher (bridge contract)**

Apr. 2023 Max Planck Institute for Astrophysics, Garching, Germany

Computational Structure Formation Group | Leader: Dr. Thorsten Naab

EDUCATION

Sep. 2018 – **Ph.D. in Astronomy**

Dec. 2022 Max Planck Institute for Astrophysics & Ludwig Maximilian University of Munich, Germany

- Supervisors: Dr. Thorsten Naab, Prof. Volker Springel
- Thesis: *The multi-phase interstellar medium in a high resolution simulation of a dwarf starburst.*

- Oct. 2016 – **M.Sc. in Astrophysics, Astronomy and Mechanics** (*summa cum laude*) [90 ECTS]
 July 2018
 National and Kapodistrian University of Athens, Greece
- Supervisors: Dr. Kalliopi Dasyra, Prof. Despina Hatzidimitriou
 - Thesis: *Study of the Kinematics and the Excitation of Molecular Gas in Radio-galaxy 4C12.50 using ALMA.*
- Sep. 2011 – **B.Sc. in Physics – Specialization in Astrophysics, Astronomy and Mechanics** (*summa cum laude*) [240 ECTS]
 Mar. 2016
 National and Kapodistrian University of Athens, Greece
- Supervisor: Prof. Despina Hatzidimitriou
 - Thesis: *Optical spectroscopic identification of AGN counterparts of X-ray sources in the M31 field.*

GRANTS, AWARDS & FELLOWSHIPS

- 2018 – 2022 **IMPRS Fellow**
 International Max Planck Research School on Astrophysics – Garching, Germany
- 2011 – 2012 **Academic Scholarship for Excellence Among Undergraduate Students**
 State Scholarships Foundation of Greece (IKY) – Athens, Greece

PUBLICATIONS

REFEREED

- Oct. 2024 **Fotopoulou, C. M., Naab, T., Lahén, N., et al. 2024, The masses, structure, and lifetimes of cold clouds in a high-resolution simulation of a low-metallicity starburst.** MNRAS, 534, pp. 215–230. doi: 10.1093/mnras/stae2072
- Aug. 2022 **Bisbas, T. G., Walch, S., Naab, T., Lahén, N., Herrera-Camus, R., Steinwandel, U. P., Fotopoulou, C. M., et al. 2022, The Origin of the [C II] 158 μ m Emission Deficit in a Simulated Dwarf Galaxy Starburst.** ApJ, 934, p. 115. doi: 10.3847/1538-4357/ac7960
- Sep. 2019 **Fotopoulou, C. M., Dasyra, K. M., Combes, F., et al. 2019, Complex molecular gas kinematics in the inner 5 kpc of 4C12.50 as seen by ALMA.** A&A, 629, A30. doi: 10.1051/0004-6361/201834416

INVITED TALKS

- May 2023 University of Bristol – Bristol (virtually), UK
- Feb. 2023 Newcastle University – Newcastle (virtually), UK
- Feb. 2022 Center for Computational Astrophysics, Simons Foundation – New York, USA
- Nov. 2021 Max Planck Institute for Astrophysics – Garching, Germany
- Oct. 2021 Hellenic Astronomical Society – Athens (virtually), Greece
- Dec. 2019 National and Kapodistrian University of Athens – Athens, Greece
- Dec. 2019 University of Cologne – Cologne, Germany

CONFERENCE CONTRIBUTIONS

Aug. 2026	Cologne-Bonn Symposium on the habitats of massive stars across cosmic time (talk) University of Cologne – Cologne, Germany
June 2022	From Stars to Galaxies II (poster) Chalmers University – Gothenburg, Sweden
July 2021	Ringberg Meeting 2021 (talk) Max Planck Institute for Astrophysics – Ringberg Castle, Germany
July 2021	15 th Hellenic Astronomical Conference (talk) Hellenic Astronomical Society – Patras (virtually), Greece
July 2017	13 th Hellenic Astronomical Conference (poster) Hellenic Astronomical Society – Heraklion, Greece
July 2016	European Week of Astronomy and Space Science 2016 (poster) European Astronomical Society – Athens, Greece

TEACHING

Apr. 2026 – July 2026	Computational Astrophysics (Graduate) Department of Physics, University of Cologne, Germany Main lecturer
Apr. 2025 – July 2025	Hydrodynamics (Graduate) Department of Physics, University of Cologne, Germany Co-lecturer with Dr. Daniel Seifried
Oct. 2016 – July 2018	Astrophysics Laboratory (4th year Undergraduate) Physics Department, National and Kapodistrian University of Athens, Greece Teaching Assistant

STUDENT SUPERVISION

July 2026 – present	Tristan Zimmermann (Master's student) University of Cologne Direct supervisor co-supervised with Prof. Stefanie Walch
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ACADEMIC SERVICE

May 2025 – Aug. 2026	LOC Member University of Cologne – Cologne, Germany Cologne-Bonn Symposium on the habitats of massive stars across cosmic time
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ORGANIZATIONS & SOCIETIES

Jun. 2023 - Ordinary Member of the Hellenic Astronomical Society
present Affiliated member of the European Astronomical Society

Jun. 2020 - Junior Member of the Hellenic Astronomical Society
May 2023

PROGRAMMING SKILLS

Languages PYTHON · MATLAB · C · FORTRAN · GIT · BASH

Codes FLASH · GADGET · PLUTO

Computing High-performance computing (HPC) and hybrid MPI/OpenMP parallelization
HPC systems used: [RAMSES](#) (ITCC) · [FREYA](#) (MPCDF) · [ARIS](#) (GRNET)
Post-processing of multi-TB simulation output

LANGUAGES

Greek – Native · **English** – Full proficiency (C2) · **French** – Full proficiency (C2) · **German** – Intermediate

WORKSHOPS & COURSES

Feb. 2024 Deep Learning School
RWTH Aachen University & ERUM Data Hub – Wiehl, Germany

July 2019 ATA - Advancing Theoretical Astrophysics Summer School
University of Amsterdam – Amsterdam, Netherlands

May 2019 Python Programming Course
Bash Programming Course
Git Programming Course
International Max Planck Research School on Astrophysics – Garching, Germany

Sep. 2017 IPP - Summer University for Plasma Physics and Fusion Research
Max Planck Institute for Plasma Physics (IPP) – Garching, Germany

July 2016 The 2nd Summer School of Hel.A.S.: “Nuclear activity in galaxies”
Hellenic Astronomical Society – Athens, Greece

Apr. 2016 Introduction to Virtual Observatory Tools
National and Kapodistrian University of Athens – Athens, Greece

PUBLIC OUTREACH & VOLUNTEERING

Sep. 2019 – Administrator of the Facebook group [Jobs for Astronomers](#) [6.1K members], an
present initiative for astrophysicists interested in academic and industry job postings

May 2019 – Principal Coordinator of *Career Seminars*

Dec. 2021 Planetarium team member, incl. hosting *Girls Day 2019*
Max Planck Institute for Astrophysics – Garching, Germany

July 2016 Volunteer at conference *European Week of Astronomy and Space Science 2016*
European Astronomical Society – Athens, Greece

Dec. 2016 – Deputy Coordinator for Greece of the students' essay contest *Cassini Scientist for a Day*
 June 2017 NASA, ESA & the National and Kapodistrian University of Athens – Athens, Greece

Oct. 2015 – Founding member of the Education and Public Outreach Team *SpaceGates*
 Aug. 2018 National and Kapodistrian University of Athens – Athens, Greece

Oct. 2015 – Volunteer at public lectures and observation nights
 Sep. 2017 National and Kapodistrian University of Athens – Athens, Greece

Exhibitor at *European Researchers' Night 2017*
 Centre of Research and Technology Hellas (CERTH) – Athens, Greece

Volunteer at *Athens Science Festival 2016*
 SciCo & British Council – Athens, Greece