

CONTACT DETAILS

Address Zülpicher Straße 77, 50937 Köln
Phone (+49) 221 470 7708
Mail rathjen@ph1.uni-koeln.de
Homepage <https://rathjen.gitlab.io/>

SCIENTIFIC CAREER

Postdoctoral researcher within the DFG Collaborative Research Centre 1601 *Habitats Of Massive Stars Across Cosmic Time* Jan. 2024 - present
University of Cologne

- Numerical modelling of the interstellar medium.
- Development of code for advanced simulation techniques [mainly using Python, Fortran, PyTorch].
- Research data management for astrophysical simulation data in compliance with FAIR principles (Findable, Accessible, Interoperable, Reusable).

Postdoctoral researcher within the North Rhine-Westphalia Profileproject *From Big Bang to Big Data (B3D)* Nov. 2021 - Dec. 2023
University of Cologne

- Numerical modelling of the interstellar medium, focusing on outflows driven by cosmic rays and galactic evolution.
- Generate synthetic observations from magnetohydrodynamics simulations to compare with observations.
- Develop and implement machine learning solutions for data reduction and post-processing, enhancing analysis of complex datasets.

Dr. rer. nat. Astronomy - *Magna Cum Laude* Oct. 2021

Max Planck Institute for Astrophysics

Simulating the multi-phase interstellar medium and galactic outflows, awarded by the Ludwig Maximilian University of Munich, with Prof. Dr. Simon D.M. White, supervised by Dr. Thorsten Naab

M. Sc. Physics Oct. 2017

University of Cologne

Driving Turbulence into Dense Clouds, supervised by Prof. Dr. Stefanie Walch-Gassner

HONORS, AWARDS AND GRANTS

Co-PI of GCS LS Call 1/2019 Feb. 2019

40 Million CPU-h on SuperMUC-NG for SUPERSILCC (project: pn34ma), equivalent to approximately €600,000 in computing resources.¹

¹The monetary value estimate is based on a rate of €0.015 per CPU-hour for comparable Tier-0 facilities and accounts for operational costs and capital investment.

PUBLICATIONS

Number of publications (as first author): 7 (3)

h -index (as first author): 5 (3)

Personal impact factor, $IF_2 = 21.3 \pm 13.4$

Citation count for my top 5 most cited records: 157

Full publication list:

(NASA/ADS: <http://bit.ly/4jFcetN>), (PDF: <https://bit.ly/3XRPA9M>)

First author publications:

1. *SILCC - VIII: The impact of far-ultraviolet radiation on star formation and the interstellar medium*
T.-E. Rathjen, S. Walch, T. Naab, P. Nürnberger, R. Wünsch, D. Seifried, S.C.O. Glover
MNRAS, 540, 1462, (2025)
2. *SILCC VII - Gas kinematics and multiphase outflows of the simulated ISM at high gas surface densities*
T.-E. Rathjen, T. Naab, S. Walch, D. Seifried, P. Girichidis, R. Wünsch
MNRAS, 522, 1843, (2023)
3. *SILCC VI - Multi-phase ISM structure, stellar clustering, and outflows with supernovae, stellar winds, ionising radiation and cosmic rays*
T.-E. Rathjen, T. Naab, P. Girichidis, S. Walch, R. Wünsch, F. Dinnbier, D. Seifried, R. S. Klessen, S.C.O. Glover
MNRAS, 504, 1039, (2021)

TEACHING AND SUPERVISION EXPERIENCE

Supervision

Apr. 2024

Co-Supervisor of bachelor thesis “ $H\alpha$ -estimated Star Formation Rates from Interstellar Medium Simulations” by Simon Littek at University of Cologne

Supervision

Dec. 2022

Co-Supervisor of bachelor thesis “Analyse von Magnetfeldern am Rand von, durch masse-reiche Sterne entstandenen und getriebenen, H II Regionen” by Andreas Wolff at University of Cologne

Tutoring

WS2024

Tutoring of *Theoretical and Computational Star Formation* at University of Cologne

Tutoring

SS2024

Tutoring of *Computational Astrophysics* at University of Cologne

Tutoring

WS2023

Tutoring of *Advanced Astrophysics* at University of Cologne

Tutoring

2015, 2017, 2023

Tutoring of *Experimental Physics For Freshmen* at University of Cologne

Tutoring

2014 - 2017

Instructor for *Freshman Physics Lab Course* at University of Cologne

COORDINATION AND MANAGEMENT

Lead organiser

Sep. 2024

Introduction to Deep Learning Workshops - Level 1 @ University of Cologne, Germany

Dr. Tim-Eric Rathjen

2 / 4

Scientific Organising Committee and Chairperson

Sep. 2024

Data Management Splinter Session @ Annual Meeting of the Astronomische Gesellschaft 2024, Cologne, Germany

Lead organiser

Jun. 2024

Introduction to Deep Learning Workshops - Level 0 @ University of Cologne, Germany

Scientific Organising Committee and Chairperson

Sep. 2023

ISM Splinter Session @ Annual Meeting of the Astronomische Gesellschaft 2023, Berlin, Germany

Local Organising Committee

Mar. 2023

RDM - Expert Workshop on synergies between NFDI, ErUM-Data and Helmholtz-DMA @ Max-Planck-Institut für Radioastronomie, Bonn, Germany

ATTENDED CONFERENCES

Invited talks at:

STScI 2025 Spring Symposium

May. 2025

Baltimore, USA

2024 Hengstberger-Symposium

Jun. 2024

Heidelberg, Germany

Contributed talks at:

2023 IAP Colloquium

Dec. 2023

Paris, France

German Astronomical Society Annual Meeting

Sep. 2023

Berlin, Germany

New Views on Feedback & the Baryon Cycle in Galaxies

Jul. 2023

Melbourne, Australia

Olympian Symposium

May. 2023

Katerini, Greece

Wheel of Star Formation - Janfest

Sep. 2022

Prague, Czech Republic

Breakthroughs in Galaxy Formation

Apr. 2022

Ringberg (online)

Zooming in on Star Formation

Jun. 2019

Nafplio, Greece

Science Week of the Universe Cluster

Dec. 2018

Kloster Seeon, Germany

Astrophysical Shocks - Conference

Mar. 2018

Potsdam, Germany

Contributed posters at:

The 7th Chile-Cologne-Bonn-Symposium

Sep. 2022

Puerto Varas, Chile

From Stars to Galaxies II - Conference

Jun. 2022

Gothenburg, Sweden

WORKSHOPS, SCHOOLS AND SEMINARS

Fast and Efficient Python Computing School

Aug. 2024

ErUM-Data-Hub, Aachen, Germany

Deep Learning School “Basic Concepts”

Mar. 2024

ErUM-Data-Hub, Wiehl, Germany

Dr. Tim-Eric Rathjen

CS & Physics Meet-Up by Lamarr & B3D Lamarr Institut, TU Dortmund University, Germany	Nov. 2023
AI Training Series - Introduction to the LRZ AI Systems Leibniz Supercomputing Centre, Garching, Germany	Nov. 2023
Advanced Deep Learning “Train-The-Trainer” ErUM-Data-Hub, Wuppertal, Germany	Jun. 2022
Seminar talks at:	
Galaxy Group Lunch Talks Lund (online)	Jan. 2023
CCA Lunch Talks NYC, USA	Feb. 2022
Star Formation/ISM Rendezvous Seminar Princeton, USA	Feb. 2022
Star Formation/ISM Rendezvous Seminar Princeton (online)	Jul. 2021

PUBLIC OUTREACH EVENTS

Public talk @ Walter-Hohmann-Sternwarte, Essen, Germany <i>Das Babyfoto des Universums</i>	Apr. 2025
Public talk @ Volksternwarte Köln, Germany <i>Das Babyfoto des Universums</i>	Mar. 2025
Public talk @ Astronomy On Tap, Köln, Germany <i>Das Babyfoto des Universums</i>	Jan. 2025
Public talk @ Verein für Raumfahrt und Astronomie, Köln, Germany <i>Das Babyfoto des Universums</i>	Oct. 2024
Public talk @ Walter-Hohmann-Sternwarte, Essen, Germany <i>Das Universum im Computer</i>	Oct. 2024
Public talk @ Astronomy On Tap, Köln, Germany <i>Das Universum im Computer</i>	Oct. 2023
Public talk @ Verein für Raumfahrt und Astronomie, Köln, Germany <i>Enthüllung des Galaktischen Theaters</i>	Aug. 2023
Ask A Astronomer @ MS Wissenschaft, Köln, Germany <i>Wissenschaftsjahr 2023 - Unser Universum</i>	Jul. 2023
Public talk @ Verein für Raumfahrt und Astronomie, Köln, Germany <i>Das Universum im Computer</i>	Nov. 2022

(Dr. Tim-Eric Rathjen)
June 6, 2025