# Jann Aschersleben

**Date of birth:** 20/08/1995  |  **Nationality:** German  |  **Gender:** Male  |

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github.com/jaschers  |  **Address:** Netherlands (Home)

## WORK EXPERIENCE

11/2020 – CURRENT Groningen, Netherlands
**PHD IN PHYSICS** UNIVERSITY OF GRONINGEN

**Topic**
Application of Artificial Neural Networks for Indirect Dark Matter Searches with HESS and CTA
Referee: Professor: dr. Manuela Vecchi
Co-Referees: Prof. dr. Reynier Peletier, dr. Michael Wilkinson

12/2017 – 05/2019 Aachen, Germany
**STUDENT ASSISTANT** FRAUNHOFER INSTITUTE FOR LASER TECHNOLOGY ILT

- Adaption of experimental setups for given tasks
- Conducting experiments in the field of thin film processing with laser radiation
- Analysis of surface characteristics of processed thin films with laser-scanning-microscopy, light microscopy and contact angle measurements
- Probe preparation and metallographic analysis
- Analysis of measured data with Python
- Programmatic implementation of models from physical and technical literature

## EDUCATION AND TRAINING

10/2018 – 10/2020 Aachen, Germany
**MASTER OF SCIENCE IN PHYSICS** RWTH Aachen University

Focus on Astroparticle Physics and Cosmology
Thesis Referee: Junior Professor Dr. rer. nat. Felix Kahlhöfer
Thesis Co-referee: Professor Dr. Thomas Reiprich

**Thesis** Thesis Title: X-ray Studies of the Galaxy Group UGC03957 using eROSITA, XMM-Newton and Suzaku Data

10/2014 – 10/2018 Aachen, Germany
**BACHELOR OF SCIENCE IN PHYSICS** RWTH Aachen University

Thesis Referee: Professor Dr. Achim Stahl
Thesis Co-referee: Professor Dr. Wolfgang Lohmann

**Address** 52062, Aachen, Germany |

**Thesis** Thesis Title: Study of Matrix Element Methods for the Higgs Boson CP Measurement in CMS

08/2012 – 06/2014 Stolberg, Germany
**SECONDARY SCHOOL** Goethe-Gymnasium

08/2006 – 06/2012 Aachen, Germany
**SECONDARY SCHOOL** Geschwister-Scholl-Gymnasium

- Language tournament Rotary
- Solar Cup of Aachen

01/2005 – 06/2006 Aachen, Germany
**PRIMARY SCHOOL** Katholische Grundschule Birkstraße

08/2002 – 01/2005 München, Germany
**PRIMARY SCHOOL** Fritz-Lutz-Grundschule

## DIGITAL SKILLS

**Programming languages**

Python │ C++ (Basic) │ C (Basic) │ MATLAB (Basic)

**Analysis Software**

eSASS │ ROOT │ Origin

**Additional Software**

LaTeX │ Microsoft Office

**Control systems**

Git/GitLab

**Web Development**

HTML/CSS (Basic)

**Operating Systems**

macOS │ Linux │ Windows

**Machine Learning**

Artificial Neural Networks │ Decision Trees │ Support Vector Machines │ Linear Regression │ Tensorflow │ Keras

**Data Science**

NumPy │ Pandas │ Scipy │ Gammapy

## LANGUAGE SKILLS

Mother tongue(s): **GERMAN**

Other language(s): **ENGLISH (PROFICIENT)** │ **DUTCH (BASIC)** │ **FRENCH (BASIC)**

## ADDITIONAL INFORMATION

### SCHOLARSHIPS

10/2020 – 09/2024
**Fundamentals of the Universe PhD Scholarship Programme**

The aim of this research theme is to study the fundamental forces of Nature with implications for the Universe. This theme connects research across all length scales by using the striking similarities in physics from the Planck scale (quantum gravity) via sub-atomic scales (particle physics) to cosmic dimensions (cosmology and astrophysics).

## PUBLICATIONS

**[Signal-background separation and energy reconstruction of gamma rays using pattern spectra and convolutional neural networks for the Small-Sized Telescopes of the Cherenkov Telescope Array](#)**
– 2023
J. Aschersleben, T. T. H. Arnesen, R. F. Peletier, M. Vecchi, C. Vlasakidis, M. H. F. Wilkinson

**[Event reconstruction using pattern spectra and convolutional neural networks for the Cherenkov Telescope Array](#)**
– 2023
J. Aschersleben, M. Vecchi, M. H. F. Wilkinson, R. F. Peletier

**[eROSITA spectro-imaging analysis of the Abell 3408 galaxy cluster](#)** – 2022
J. Iljenkarevic, T. H. Reiprich, F. Pacaud, A. Veronica, B. Whelan, J. Aschersleben, K. Migkas, E. Bulbul, J. S. Sanders, M. E. Ramos-Ceja, T. Liu, V. Ghirardini, A. Liu, T. Boller

**[Application of pattern spectra and convolutional neural networks to the analysis of simulated Cherenkov Telescope Array data](#)**
– 2021
J. Aschersleben, R. F. Peletier, M. Vecchi, M. H. F. Wilkinson

**[X-ray studies of the Abell 3158 galaxy cluster with eROSITA](#)** – 2021
B. Whelan, A. Veronica, F. Pacaud, T. H. Reiprich, E. Bulbul, M. E. Ramos-Ceja, J. S. Sanders, J. Aschersleben, J. Iljenkarevic, K. Migkas, M. Freyberg, K. Dennerl, M. Kara, A. Liu, V. Ghirardini, N. Ota

**[The Abell 3391/95 galaxy cluster system: A 15 Mpc intergalactic medium emission filament, a warm gas bridge, infalling matter clumps, and (re-) accelerated plasma discovered by combining SRG/ eROSITA data with ASKAP/EMU and DECam data](#)**
– 2021
T.H. Reiprich, A. Veronica, F. Pacaud, M.E. Ramos-Ceja, N. Ota, J. Sanders, M. Kara, T. Erben, M. Klein, J. Erler, J. Kerp, D.N. Hoang, M. Brüggen, J. Marvil, L. Rudnick, V. Biffi, K. Dolag, J. Aschersleben, K. Basu, H. Brunner, E. Bulbul, K. Dennerl, D. Eckert, M. Freyberg, E. Gatuzz, V. Ghirardini, F. Käfer, A. Merloni, K. Migkas, K. Nandra, P. Predehl, J. Robrade, M. Salvato, B. Whelan, A. Diaz-Ocampo, D. Hernandez-Lang, A. Zenteno, M.J.I. Brown, J.D. Collier, J.M. Diego, A.M. Hopkins, A. Kapinska, B. Koribalski, T. Mroczkowski, R.P. Norris, A. O'Brien, E. Vardoulaki

## INVITED TALKS

04/03/2023
**Young Minds Yerevan Student Event**

Yerevan, Armenia (online)
Title: Dark matter searches with gamma-ray observations in the era of machine learning

04/03/2022
**Marie Curie Machine Learning Symposium**

Nijmegen, the Netherlands
Title: Artificial Neural Networks and their Application in Gamma-ray Astronomy

## CONFERENCES AND SEMINARS

08/09/2023 – Groningen, the Netherlands
**Kapteyn Friday Lunch Talk** Gamma-Ray Event Reconstruction for the Cherenkov Telescope Array using Machine Learning

20/06/2023 – 21/06/2023 – Soesterberg, the Netherlands
**27th Astroparticle Physics in the Netherlabds (CAN) Symposium Talk:** Search for Self-annihilating Dark Matter around Intermediate Mass Black Holes with the H.E.S.S. Experiment

09/12/2022 – Groningen, the Netherlands
**Kapteyn Science Day 2022 Talk:** Detecting gamma rays with machine learning

04/07/2022 – 08/07/2022 – Barcelona, Spain
**7th Heidelberg International Symposium on High-Energy Gamma-Ray Astronomy Poster & proceedings article**: Event reconstruction using pattern spectra and convolutional neural networks for the Cherenkov Telescope Array

16/06/2022 – 17/06/2022 – Soesterberg, the Netherlands
**26th Astroparticle Physics in the Netherlabds (CAN) Symposium Flash talk**

03/06/2022 – Paris, France
**European Physical Society (EPS) Young Minds Leadership Meeting Poster**: Young Minds Groningen Section Activities 2022

25/01/2022 – 26/01/2022 – Veldhoven, the Netherlands
**Physics@Veldhoven Poster**: Event reconstruction using pattern spectra and machine learning for the Cherenkov Telescope Array

10/11/2021 – Groningen, the Netherlands
**Basic Notions Seminar Talk:** Artificial Neural Networks

26/10/2021 – Groningen, the Netherlands
**Galaxy Cookies Symposium Talk:** Dark Matter Searches with the Cherenkov Telescope Array

24/09/2021 – Groningen, the Netherlands
**Fundamentals of the Universe (FotU) Symposium Poster**: Energy reconstruction using pattern spectra and machine learning for the Cherenkov Telescope Array

12/07/2021 – 23/07/2021 – Berlin, Germany
**37th International Cosmic Ray Conference Poster & proceedings article**: Application of pattern spectra and convolutional neural networks to the analysis of simulated Cherenkov Telescope Array data

25/06/2021 – Groningen, the Netherlands
**Fundamentals of the Universe (FotU) Mini Symposium Talk**: Dark Matter Searches with the Cherenkov Telescope Array

02/06/2021 – Groningen, the Netherlands
**Kapteyn Science Day Talk:** Application of Artificial Neural Networks for Dark Matter searches in Dwarf Spheroidal Galaxies with CTA

## WORKSHOPS, SUMMER/WINTER SCHOOLS & COURSES

27/09/2022 – 30/09/2022
**PHYSTAT-Gamma 2022 Workshop**

Online

25/01/2022 – 28/01/2022
**H.E.S.S. School**

Online

10/12/2021
**Storytelling Workshop**

Groningen, the Netherlands

22/06/2021 – 23/06/2021
**ICRC 2021 Scientific Writing Workshop**

Online

14/06/2021 – 16/06/2021
**Nederlandse Onderzoekschool Voor Astronomie (NOVA) PhD Fall School**

Online

02/2020 – 05/2021
**Machine Learning with Python-From Linear Models to Deep Learning Course**

MITx: Massachusetts Institute of Technology course on edX

Final Grade: 89 %

22/03/2021 – 23/03/2021
**CTA DL1 Benchmark Workshop**

Online

02/12/2020 – 04/12/2020
**South American Dark Matter Workshop**

Online

## NETWORKS AND MEMBERSHIPS

2021 – CURRENT
**High Energy Stereoscopic System (H.E.S.S.) Collaboration**

2021 – CURRENT
**European Physical Society (EPS)**

2021 – CURRENT
**EPS Young Minds**

2020 – CURRENT
**Nederlandse Onderzoekschool Voor Astronomie (NOVA)** Netherlands Research School for Astronomy

2020 – CURRENT
**Cherenkov Telescope Array (CTA) Collaboration**

2019 – 2020
**extended ROentgen Survey with an Imaging Telescope Array (eROSITA) DE Collaboration**

2018
**Compact-Muon-Solenoid (CMS) Collaboration at European Organization for Nuclear Research (CERN)**

## SUPERVISION OF STUDENTS

2021 – 2022
**Tora T. H. Arnesen, BSc**

**Master project**: Pattern Spectra Attribute Combinations and their Effect on the Application of Convolutional Neural Networks for the Cherenkov Telescope Array Small-Sized Telescope Energy Reconstruction
*University of Groningen*

2021 – 2022
**Christos Vlasakidis, BSc**

**Master project**: Application of Artificial Intelligence methods to the reconstruction of gamma rays with the Cherenkov Telescope Array
*University of Groningen*

## TEACHING ACTIVITIES

02/2022 – 04/2022
**Tutor in Astroparticle Physics**

BSc degree in Physics and Astronomy
*University of Groningen (in English)*

## PROJECTS

2022 – CURRENT
**Damspi**

**Role:** Developer
**Description:** Dammspi extracts the dark matter mini-spike parameters from Intermediate Mass Black Holes (IMBHs) in Milky Way-like galaxies from the EAGLE N-body cosmology simulation.
**Technologies used:** Python
**GitHub:** https://github.com/jaschers/dammspi

2022 – CURRENT
**CheckmAIte**

**Role:** Developer
**Description:** CheckmAIte is a chess engine based on a convolutional neural network and a minimax algorithm.
**Technologies used:** Python
**GitHub:** https://github.com/jaschers/checkmAIte

2020 – 2023
**PSNet**

**Role:** Developer
**Description:** PSNet is the first application of pattern spectra on convolutional neural networks (CNNs) for the event reconstruction of imaging atmospheric Cherenkov telescopes (IACTs)
**Technologies used:** Python, C
**GitHub:** https://github.com/jaschers/psnet

2022
**Daily Paper**

**Role:** Developer
**Description:** Daily Paper searches and opens papers on arXiv that were uploaded on the previous day. The papers will be selected, opened and documented based on the keywords you specify.
**Technologies used:** Python
**GitHub:** https://github.com/jaschers/daily-paper

## SERVICES TO THE COMMUNITY

**H.E.S.S. Day Shift (Remote)**

Day shifter on:
- 10/2023
- 01/2023
- 10/2022

2022 – CURRENT
**Machine Learning Journal Club Organiser**

Groningen, the Netherlands

11/2021 – 11/2022
**Young Minds Groningen President**

Groningen, the Netherlands

2020 – 2022
**Cosmology Journal Club Member**

Groningen, the Netherlands

## OUTREACH ACTIVITIES

11/2023
**Beyond the Academia Horizon**

Event organised by the Young Minds Groningen
Groningen, the Netherlands

05/2023
**Meet the Young Minds**

Event organised by the Young Minds Groningen
Groningen, the Netherlands

02/2023
**International Day of Women and Girls in Science**

Event organised by the Young Minds Groningen
Groningen, the Netherlands

12/2022
**Scientific Movie Night**

Event organised by the Young Minds Groningen
Groningen, the Netherlands

02/2022
**International Day of Women and Girls in Science**

Online event organised by the Young Minds Groningen

## RESEARCH GRANTS

04/2023
**Leids Kerkhoven-Bosscha Fonds**

**432.50 Euro**
Funding for a work visit to DESY in Hamburg, Germany

10/2022
**Leids Kerkhoven-Bosscha Fonds**

**600 Euro**
Funding for a work visit to DESY in Hamburg, Germany

05/2022
**Leids Kerkhoven-Bosscha Fonds**

**500 Euro**
Funding for the 7th Heidelberg International Symposium on High-Energy Gamma-Ray Astronomy in Barcelona, Spain

## CONTRIBUTIONS TO COLLABORATION MEETINGS

17/04/2023 – 21/04/2023
**H.E.S.S. Collaboration Meeting**

**Talk**: Self-annihilating Dark Matter around Intermediate Mass Black Holes
Cavan, Ireland

**H.E.S.S. Physics Beyond Standard Model (PBSM) Call**

**Presented on:**
 • 05/2023
 • 02/2023
 • 12/2022
**Talk**: Self-annihilating Dark Matter around Intermediate Mass Black Holes
Online

16/05/2022 – 20/05/2022
**CTAO/CTAC General Meeting**

**Talk:** Application of pattern spectra to the analysis of simulated Cherenkov Telescope Array data
Bologna, Italy

**CTA Analysis and Simulation Working Group (ASWG) Call**

**Presented on:**
 • 05/2022
 • 03/2022
 • 06/2021
 • 02/2021
**Talk:** Application of pattern spectra to the analysis of simulated Cherenkov Telescope Array data
Online

## INTERNATIONAL EXCHANGES

03/09/2012 – 19/09/2012
**Aachen-Arlington High School Exchange**

Washington D.C & New York City

## DRIVING LICENCE

**Driving Licence:** B