Ludwig Böss

lboess@usm.lmu.de
LudwigBoess
October 4th 1991
https://LudwigBoess.github.io
GER, EN, FR, IT

Education

2020–now
Munich

Astrophysics, PhD, Ludwig-Maximilians-Universität

Thesis: Cosmic Rays, Turbulence and Magnetic Fields in Galaxy Clusters.
Supervisors: Prof. Dr. Harald Lesch, Dr. habil. Klaus Dolag

2017–2020
Munich

Astrophysics, M.Sc., Ludwig-Maximilians-Universität

GPA: 4.0
Thesis: Cosmic Rays in Galaxy Clusters - An on-the-fly Fokker-Planck Solver for OpenGadget3; Supervisor: Dr. habil. Klaus Dolag

2014–2017
Munich

Physik, B.Sc., Ludwig-Maximilians-Universität

GPA: 2.7
Thesis: Radial Orbit Instability - Analysis of geometry in unperturbed and perturbed systems; Supervisor: Prof. Dr. Andreas Burkert

2011–2014
Munich

Musicology, B.A., Ludwig-Maximilians-Universität

GPA: 3.0
Thesis: Witold Lutoslawski's Concerto for Orchestra in the context of Socialist Realism; Supervisor: Prof. Dr. Wolfgang Rathert

2011
Munich

Highschool Diploma, Theodolinden Gymnasium

GPA: 3.3
Majors: English and Music

Conferences and Workshops

August 2022 **International Astronomical Union General Assembly**, Busan, *KOR*

July 2021 **MIAPP workshop - High energy phenomena in astrophysics**, Munich, *GER*

July 2021 **ICRC 2021**, online

February 2020 **Hydrosim Meeting 2020**, Munich, *GER*

Computing Time

2022 **C2PAP Computing Grant (PI)**, Galaxy Clusters with Spectral Cosmic Rays
5 Million CPUh

2020 **GAUSS Large Scale Project (co-I, PI: Dolag)**, COMPASS
50 Million CPUh

Teaching

2022 **Masters Thesis**, Student: Daniel Karner

Assisting supervisor

2022 **Astrophysics III**, Lecture: Prof. Harald Lesch

Teaching Assistant

2021 **Astrophysics II**, Lecture: Prof. Harald Lesch

Teaching Assistant

2021 **Bachlor Thesis**, Student: Julian Sommer

Assisting supervisor

2020 **Theoretical Astrophysics**, Seminar: Prof. Harald Lesch

Teaching Assistant

2020 **Astrophysics I**, Lecture: Prof. Harald Lesch

Teaching Assistant

Public Outreach

2023 **Café & Kosmos**, Outreach event by ORIGINS/LMU/TUM

Public Talk

2021 **Entropia**, Podcast

Interview

2019 **BR Campus Magazin**, TV documentary

Interview

2019 **Tag der Physik**, Public outreach day of the LMU physics department

Mentor

2016-2019 **LMU Campus Tag**, Public outreach day of the LMU

Mentor

Work experience

March 2023–Now
Munich/Garching

Research Unit Manager

Excellence Cluster ORIGINS, Turbulence Connector

Tasks:

- Organisation of monthly collaboration meeting.
- Summary of ongoing projects for scientific outreach.
- PI rights (e.g. steering, visitor invitation)

Jan. 2017–March 2019
Munich/Haar

Working student

attocube Systems AG, Customer Success / Business Intelligence

Process optimisation and data analysis, e.g.:

- Development of an automated customer satisfaction survey (NPS) using SSIS and Python.
- Gathering and evaluating of key data concerning quality assurance, customer satisfaction and R&D.

Publications

2023 **CRESCENDO: An on-the-fly Fokker-Planck Solver for Spectral Cosmic Rays in Cosmological Simulations**, **Böss, L.**, Steinwandel, U., Dolag, K., Lesch, H., MNRAS, 519,1, pp.548-572

in prep. **Simulating the LOcal Web (SLOW) - *IV*: The Synchrotron Cosmic Web**, **Böss, L.**, Dolag, K., Steinwandel, U., Hernández-Martínez, E., Sorce, J., Aghanim, N.

in prep. **Simulating the LOcal Web (SLOW) - *V*: γ-Ray Emission in Local Clusters**, **Böss, L.**, Khabibullin, I., Dolag, K., Steinwandel, U., Hernández-Martínez, E., Sorce, J., Aghanim, N.

in prep. **Galaxy Cluster simulations with a spectral CR model**, **Böss, L.**, Steinwandel, U., Dolag, K.

2022 **Insights on the origin of ORCs from cosmological simulations**, Dolag, K., **Böss, L.**, Koribalski, B., Steinwandel, U., Valentini, M., `arXiv:2208.15003`

Contributions: Post-processing of the CR component, related figures and chapters in the paper.

2022 **Virgo: Scalable Unsupervised Classification of Cosmological Shock Waves**, Lamparth, M., **Böss, L.**, Steinwandel, U., Dolag, K., `arXiv:2208.06859`

Contributions: Scientific input, development contribution, all figures in publication.

2022 **On the small scale turbulent dynamo in the intra cluster medium: A comparison to dynamo theory**, Steinwandel, U., **Böss, L.**, Dolag, K., Lesch, H., ApJ, 933, 2, 131

Contributions: Analysis tools and scripts. Related test simulations.

in prep. **Simulating the LOcal Web (SLOW) - *III*: Radio Halos in the Local Universe**, Dolag, K., **Böss, L.**, Sorce, J., Aghanim, N.

Contributions: Analysis of the Cosmic Ray related results.

2019 **WVTICs - SPH initial conditions for everyone**, Arth, A., Donnert, J, Steinwandel, U., **Böss, L.**, et. al., `arXiv:1907.11250`

Contributions: Implementation of the artificial bias correction and writing the corresponding section. Rerunning the tests and figures for the paper.

Skills

Languages

German	First language
English	Fluent
French	Conversation skills
Italian	Basic communication skills

Programming skills

Julia ●●●●○ C/C++ ●●●●○ Python ●●●●○ Fortran ●●●○○

SQL ●●●●○ HTML/CSS ●●○○○