Miha Černetič

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Date of birth: 13.12.1994

Education

Jan 2020 - present **PhD, Physics**, *Ludwig-Maximilians-Universität München*, München, Germany, expected graduation date: Feb 2024

Oct 2017 - Nov 2019 **Masters of Science, Physics**, *Georg-August-Universität*, Göttingen, Germany

2013 - 2017 **Bachelor of Science, Physics**, *University of Ljubljana*, Ljubljana, Slovenia

Research Experience

Oct 2017 - Dec 2019 **Research Assistant**, *Max Planck Institute for Solar System Research*, Göttingen, Germany

Jun 2017 - Aug 2017 **Max Planck Institute for Astrophysics**, *Garching, Germany*
Invited research visit by Dr. Thorsten Naab
- Analysis of zoom-in galaxy formation simulations

Oct 2016 - May 2017 **Max Planck Institute for Solar System Research**, *Göttingen, Germany*
Invited research visit by Dr. Alexander Shapiro
- Numerical radiative transfer and opacity distribution function implementation in Fortran

Aug 2016 **Max Planck Institute for Solar System Research**, *Göttingen, Germany*
Internship supervised by Dr. Alexander Shapiro
- Numerical radiative transfer and opacity distribution function implementation in Fortran

Oct 2015 - Jul 2016 **Jožef Stefan Institute**, *Ljubljana, Slovenia*
Student Researcher, supervised by Dr. Matej Lipoglavšek
- Investigating theoretical models of nuclear reactions

Astrophysical software projects

TENETgpu **Main developer**, Discontinuous Galerkin GPU code developed during my PhD, accessible here.

pygad **Maintainer since Jan 2020**, of a lightweight but comprehensive python module for analysis of Gadget and Arepo simulations, accessible here.

trace_pygad **Main developer**, of a pygad wrapper to trace clouds based on user-defined properties across snapshots to generate a merger tree, accessible here.

Students

Joanne Tan Graduate student co-supervised with Dr. Thorsten Naab, since September 2022.

Miro Joensuu Intern co-supervised with Prof. Volker Springel, Summer 2023.

Software skills

Languages CUDA C++ (MPI, openMP, Kokkos), C, PYTHON, FORTRAN, julia, Mathematica, Rust

Tools docker, slurm, Dask, zarr, LaTeX, bash, *nix, gnuplot, IRAF

Extra-research activities

2020 - present Student representative

2021 - present Sustainability group member at MPA

Languages

Slovenian Mother tongue

English Advanced

German CEFR level: B1

Presentations

Oral presentations

2023 **34th IUPAP Conference on Computational Physics**, *Kobe, Japan*

2023 **Astrophysics Colloquium**, *Faculty of Mathematics and Physics, University of Ljubljana, Slovenia*

2022 **Astrophysics Department Seminar**, *Exeter, UK*

2022 **Breakthroughs in Galaxy Formation**, *Ringberg, Germany*, "Discontinuous Galerkin Hydrodynamics on GPUs and its application to Driven Turbulence"

2022 **Max Planck Institute for Astrophysics Institute Seminar**, *Garching, Germany*, "Discontinuous Galerkin Hydrodynamics on GPUs and its application to Driven Turbulence"

2018 **XXXth General Assembly of the International Astronomical Union, Focus Meeting 9, Solar Irradiance: Physics-Based Advances**, *Vienna, Austria*, "Fast Spectral Synthesis for a New Generation of Solar and Stellar Brightness Variability Models"

2018 **15th HITRAN Conference**, *Boston, USA*, "Importance of Line Databases for Spectral Synthesis for a New Generation of Solar and Stellar Brightness Variability Models"

2018 **2018 Sun-Climate Symposium**, *Lake Arrowhead, USA*, "Fast Spectral Synthesis for a New Generation of Solar and Stellar Brightness Variability Models"

Posters

Jun 2022 **European Astronomical Society Annual Meeting**, *Valencia, Spain*, "High-order hydrodynamics with sub-cell shock capturing on GPUs".