

# Miha Cernetic

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*Big whirls have little whirls, That feed on their velocity;  
And little whirls have lesser whirls, And so on to viscosity.  
– Lewis Fry Richardson*

## 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 **Jozef Stefan Institute**, *Ljubljana, Slovenia*  
Student Researcher, supervised by Dr. Matej Lipoglavsek
  - 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.

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## Software skills

Languages	CUDA C++ (MPI, openMP, Kokkos), C, PYTHON, FORTRAN, julia, Mathematica, Rust
Tools	docker, slurm, Dask, zarr, L <sup>A</sup> T <sub>E</sub> X, bash, *nix, gnuplot, IRAF

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## Extra-research activities

2020 - present	Student representative
2021 - present	Sustainability group member at MPA

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## Awards and grants

2018	IAU2018 travel grant, 600€.
2013	Gold medal in the Slovenian national astronomy competition.
2013	Best project: "Automation of an astronomical observatory" awarded by the Slovenian Centre of Excellence for Space Sciences and Technologies Space-SI.
2013	Municipal award in Ajdovina for extraordinary achievements of high school students.

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## Languages

Slovenian	Mother tongue
English	Advanced
German	CEFR level: B1

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## Presentations

### Oral presentations

2023	<b>34th IUPAP Conference on Computational Physics</b> , <i>Kobe, Japan</i>
2023	<b>Astrophysics Colloquium</b> , <i>Faculty of Mathematics and Physics, University of Ljubljana, Slovenia</i>
2022	<b>Astrophysics Department Seminar</b> , <i>Exeter, UK</i>
2022	<b>Breakthroughs in Galaxy Formation</b> , <i>Ringberg, Germany</i> , "Discontinuous Galerkin Hydrodynamics on GPUs and its application to Driven Turbulence"
2022	<b>Max Planck Institute for Astrophysics Institute Seminar</b> , <i>Garching, Germany</i> , "Discontinuous Galerkin Hydrodynamics on GPUs and its application to Driven Turbulence"
2018	<b>XXXth General Assembly of the International Astronomical Union, Focus Meeting 9, Solar Irradiance: Physics-Based Advances</b> , <i>Vienna, Austria</i> , "Fast Spectral Synthesis for a New Generation of Solar and Stellar Brightness Variability Models"
2018	<b>15th HITRAN Conference</b> , <i>Boston, USA</i> , "Importance of Line Databases for Spectral Synthesis for a New Generation of Solar and Stellar Brightness Variability Models"
2018	<b>2018 Sun-Climate Symposium</b> , <i>Lake Arrowhead, USA</i> , "Fast Spectral Synthesis for a New Generation of Solar and Stellar Brightness Variability Models"

### Posters

Jun 2022	<b>European Astronomical Society Annual Meeting</b> , <i>Valencia, Spain</i> , "High-order hydrodynamics with sub-cell shock capturing on GPUs".
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