



Mladen Ivkovic

PhD Candidate

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SUMMARY

My background is in physics and astrophysics, with heavy emphasis on computational astrophysics and software development for high performance simulations and on-the-fly analysis. So far, I have worked on halo finding, mergertree building, fluid dynamics (using meshless methods, finite volume methods, and smoothed particle hydrodynamics), and radiative transfer in astrophysical codes that make use of MPI, OpenMP, and QuickSched. I am looking for new challenges in the development, improvement, optimization, and extension of open source high performance scientific software!

EDUCATION AND EMPLOYMENT

UNIVERSITY OF ZURICH

2012 - 2017

BSC IN PHYSICS (MAJOR) AND APPLIED INFORMATICS FOR SCIENTISTS (MINOR)

- Bachelor thesis on "[Halo- and Subhalo Finding in Cosmological N-Body Simulations](#)" with Prof. Romain Teyssier

UNIVERSITY OF ZURICH

2016 - 2018

MSc IN THEORETICAL ASTROPHYSICS AND COSMOLOGY

- Master thesis on "[Creating Mock Galaxy Catalogues from Dark Matter Simulations](#)" with Prof. Romain Teyssier

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

2018 - today

PHD CANDIDATE IN ASTROPHYSICS

- Thesis on "Dwarf Galaxies in the Epoch of Reionization" with Dr. Yves Revaz and Prof. Anne Verhamme

TEACHING

ZURICH

2011 - 2016

- PRIVATE TUTOR in physics, mathematics, and German at elementary-, middle-, high-school and university level

UNIVERSITY OF ZURICH

2014 - 2018

- TEACHING ASSISTANT for basic physics courses, practical courses in physics, and introduction to programming

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

2019 - today

- TEACHING ASSISTANT for MSc level lectures "Stellar and Galactic Dynamics" and "Observational Cosmology"

SOFTWARE

SIMULATION

- Contributed to [RAMSES](#) and [SWIFT](#) open source astrophysical high performance simulation codes.
- Written a [didactical finite volume hydrodynamics solver](#).

VISUALISATION AND ANALYSIS

- Contributed to the [swiftsimio](#) and [pNbody](#) python libraries.
- Written a python library for [visualisation of "effective surfaces"](#) in mesh-free hydrodynamics methods

PUBLICATIONS

- Mladen Ivkovic, Romain Teyssier, [ACACIA: a new method to produce on-the-fly merger trees in the RAMSES code](#), Monthly Notices of the Royal Astronomical Society, Volume 510, Issue 1, February 2022, Pages 959–979, <https://doi.org/10.1093/mnras/stab3329>

TALKS

- SWIFTcon, Durham, November 2019: *"On Meshless Methods in Astrophysics"*
- RASCAS-in-SPHINX workshop, Geneva, December 2019: *"On Meshless Methods in Astrophysics"*

OUTREACH

UNIVERSITY OF ZURICH

2015 - 2017

- Participated in university-wide public outreach events as a point of contact for people interested in studying physics

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

2018 - today

- Participated in university-wide public outreach events as a point of contact for the general public
- Guide on public and private visitations to the Geneva Observatory

GRANTS

HPC-EUROPA3 TRANSNATIONAL ACCESS PROGRAMME

2021

AWARDED TRAVEL GRANT TO LEIDEN (NL) FOR 9 WEEKS AND 100'000 CPU HOURS

- to enhance the parallelisation of the radiative transfer module in [SWIFT](#)

SKILLS

PROGRAMMING LANGUAGES	Experienced: Python C Fortran bash LaTeX	Familiar: C++ Java Mathematica
PARALLELISATION	Experienced: MPI OpenMP QuickSched	Familiar: openACC CUDA
SOFTWARE DEVELOPMENT	Experienced: git CLI	Familiar: GitLab CI/CD sphinx
LANGUAGES	Native: German Swiss German Serbian	Fluent: English Intermediate: French

EXTRA

PLANET5, ZURICH

2012 - 2015

VOLUNTEER WORK AT THE "METAL APOCALYPSE" CONCERT SERIES

- as event manager, booking agent, allrounder, bartender, and photographer.

MUNDWERK KULTURBIOTOP, ZURICH

2013 - 2022

VOLUNTEER WORK AT THE YOUTH ORIENTED MUSIC CLUB

- as event manager, booking agent, bartender, allrounder, and Chef de Bar.
- Board member 2013 - 2017