Mladen Ivkovic

PhD Candidate
École Polytechnique Fédérale de Lausanne

Wehntalerstrasse 298
8046 Zürich, Switzerland
mladen.ivkovic@epfl.ch

**12. June 1994*
Swiss
homepage | *github* | *linkedin*

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