

# Stefan Radman

## PERSONAL DETAILS

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*Birth date, place* 12 July 1992, Belgrade, Serbia  
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## EDUCATION

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**Ph.D. Nuclear Engineering** 2017 – 2021

*École Polytechnique Fédérale de Lausanne (EPFL), Vaud, Switzerland*

Development, verification and validation of a C++ computer code for the simulation of thermal-hydraulics of advanced nuclear reactor concepts, primarily Sodium-cooled Fast Reactors; integration of said code within (and further development of) the open-source [GeN-Foam](#) multi-physics code.

**M.Sc. Nuclear Engineering (with distinction)** 2014 – 2016

*Eidgenössische Technische Hochschule Zürich (ETHZ), Zürich, Switzerland*

**B.Sc. Engineering Physics** 2011 – 2014

*Politecnico di Milano, Lombardia, Italy*

## PROFESSIONAL EXPERIENCE

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**Modeling and simulation engineer** January, 2022 – Present

*Casale, Lugano, Switzerland*

Variety of activities at the digital engineering department: 1) development of model-based software for the simulation of chemical plant unit operations; 2) development and maintenance of company web application back-ends; 3) management and analysis of large technical data-sets.

**IAEA Training Course Series assistant** September, 2021 – December, 2021

*International Atomic Energy Agency (IAEA), Vienna, Austria*

Drafting and finalization of an IAEA Training Course Series book related to a [jointly-held ICTP-IAEA course](#) on the theoretical foundations and application of Computational Fluid Dynamics in nuclear engineering.

**Scientific collaborator** April – August, 2021

*École Polytechnique Fédérale de Lausanne (EPFL), Vaud, Switzerland*

Extension of the code developed during the Ph.D. to the analysis of traditional nuclear reactor designs.

**Intern** July – September, 2015

*Nationale Genossenschaft für die Lagerung radioaktiver Abfälle (Nagra), Aargau, Switzerland*

Activation calculations for the [PSI proton accelerator](#) shielding at the Paul Scherrer Institut (Aargau, Switzerland) with the FLUKA Monte Carlo code.

## RESEARCH EXPERIENCE

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### IAEA Coordinated Research Project participant

2018 – 2022

Participation to a [Coordinated Research Project](#) by the IAEA on computer code benchmarking for fast nuclear reactor concept analyses.

### Teaching assistant

2017 – 2021

Teaching assistant duties at the EPFL consisted in: 1) exercise sessions for a M.Sc.-level neutron physics course; 2) experimental sessions for a M.Sc.-level radiation protection course; 3) experimental sessions for a B.Sc.-level general physics course, from Newtonian mechanics to black-body radiation.

## SKILLS

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<i>Languages</i>	English (full working proficiency), Italian (native), Serbian (native), French (elementary working proficiency)
<i>Programming languages</i>	C++ <sup>A</sup> (libraries: OpenFOAM <sup>A</sup> , ImGui <sup>A</sup> ), C# <sup>I</sup> , CMake <sup>I</sup> , Python <sup>A</sup> (libraries: Numpy <sup>A</sup> , Numba <sup>A</sup> , Tkinter <sup>A</sup> , Pandas <sup>I</sup> , TensorFlow <sup>E</sup> , Scipy <sup>E</sup> ), MATLAB <sup>I</sup> , Fortran <sup>E</sup> , GLSL <sup>A</sup> , Z80 and Intel 8080 Assembly <sup>E</sup>
<i>OSs, software, APIs</i>	Windows OS <sup>A</sup> , Linux environment (Ubuntu OS <sup>A</sup> ); Visual Studio <sup>I</sup> , Visual Studio Code <sup>I</sup> IDEs; Git <sup>A</sup> , Gitlab CI/CD pipelines <sup>E</sup> ; Serpent <sup>I</sup> and FLUKA <sup>E</sup> Monte Carlo codes; High Performance Computing (on <a href="#">CSCS</a> <sup>E</sup> ), Nvidia CUDA (on Python with Numba <sup>I</sup> ), OpenGL <sup>I</sup> ; Socket <sup>I</sup> and REST <sup>I</sup> based communication protocols for web applications; MongoDB <sup>I</sup> ; MS/Libre Office <sup>A</sup> , L <sup>A</sup> T <sub>E</sub> X <sup>A</sup>

A, E, I: the superscripts denote the level of self-assessed proficiency: advanced (A), intermediate (I), elementary (E).

## PERSONAL INTERESTS

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### Shader programming

Experimenting with OpenGL shader programming in conjunction with my knowledge of scientific computing to explore the realm of generative art. This interest led me to develop [ShaderThing](#), a GUI-based tool for live shader programming.

### Drawing

Self-taught, doodle-inspired, drawing on paper with fine-liner pens. [Here](#) is an example of one of my works.

### Electric guitar

I have attended lessons at the Vincenzo Appiani music school in Monza, Italy, in the 2009 – 2014 period. Currently, I play at an amateur level.

## PUBLICATIONS

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- [1] H. Qin, C. Fiorina, R. Zhang, **S. Radman**, D. Zhang, C. Wang, W. Tian, S. Qiu, and G. Su, “Extension of GeN-Foam to modeling of boiling water and validation against the OECD/NRC PSBT benchmark,” *Nuclear Engineering and Design*, vol. 408, p. 112320, 2023.
- [2] **S. Radman**, C. Fiorina, P. Song, and A. Pautz, “Development of a point-kinetics model in OpenFOAM, integration in GeN-Foam, and validation against FFTF experimental data,” *Annals of Nuclear Energy*, vol. 168, p. 108891, 2022.
- [3] **S. Radman**, C. Fiorina, and A. Pautz, “Development of a novel two-phase flow solver for nuclear reactor analysis: validation against sodium boiling experiments,” *Nuclear Engineering and Design*, vol. 384, p. 111422, 2021.
- [4] **S. Radman**, C. Fiorina, and A. Pautz, “Development of a novel two-phase flow solver for nuclear reactor analysis: algorithms, verification and implementation in OpenFOAM,” *Nuclear Engineering and Design*, vol. 379, p. 111178, 2021.

- [5] **S. Radman**, C. Fiorina, K. Mikityuk, and A. Pautz, “A Coarse-mesh Methodology for Modelling of Single-phase Thermal-hydraulics of ESFR Innovative Assembly Design,” *Nuclear Engineering and Design*, vol. 355, p. 110291, 2019.
- [6] C. Fiorina, **S. Radman**, A. Scolaro, and A. Pautz, “A Reduced Order Accelerator for Time-dependent Segregated Neutronic Solvers,” *Annals Of Nuclear Energy*, vol. 121, pp. 177–185, 2018.
- [7] **S. Radman**, C. Fiorina, and A. Pautz, “Preliminary Development of a Coarse-mesh Sodium Boiling Model for OpenFOAM Based Multi-physics Solvers,” in *Proceedings of the 18th International Topical Meeting on Nuclear Reactor Thermal Hydraulics*, August 2019.
- [8] C. Fiorina, **S. Radman**, and A. Pautz, “Preliminary Application of the Gen-Foam Multiphysics Tool to the Analysis of the FFTF Sodium Fast Reactor: Coupling Thermal-hydraulics And Core Deformations,” in *Proceedings of the 18th International Topical Meeting on Nuclear Reactor Thermal Hydraulics*, August 2019.
- [9] C. Fiorina, **S. Radman**, M. Z. Koc, and A. Pautz, “Detailed Modelling of Expansion Reactivity Feedback in Fast Reactors Using OpenFOAM,” in *Proceedings of M&C*, August 2019.
- [10] **S. Radman**, C. Fiorina, K. Mikityuk, and A. Pautz, “A Simplified Numerical Benchmark for Pool-Type Sodium Fast Reactors,” in *Proceedings of the 26th International Conference on Nuclear Engineering*, American Society of Mechanical Engineers, July 2018.
- [11] **S. Radman**, C. Fiorina, and A. Pautz, “Investigation of Partial Coolant Flow Blockage in a Sodium Fast Reactor Assembly with Coarse-mesh Methodologies,” in *Proceedings of the 26th International Conference New Energy for New Europe*, September 2017.
- [12] V. P. Lamirand, G. Perret, **S. Radman**, D. J. Siefman, M. Hursin, P. Frajtag, A. Gruel, P. Leconte, P. Blaise, and A. Pautz, “Design of Separated Element Reflector Experiments in CROCUS: PETALE,” in *Proceedings of the 16th International Symposium on Reactor Dosimetry*, May 2017.