

**KOPANIČÁKOVÁ Alena (ORCID: 0000-0001-8388-5518)**Nationality: Slovak, web site: <https://kopanicakova.github.io>

- **CURRENT POSITION**

- Visiting Researcher, Division of Applied Mathematics, Brown University, USA
- Scientific collaborator, Euler Institute, Università della Svizzera italiana, Switzerland



- **EDUCATION**

- 2020 PhD (Computational Science), Università della Svizzera italiana, Switzerland
- 2015 MSc (Informatics), Università della Svizzera italiana, Switzerland

- **INTERNATIONAL RECOGNITION (honors, prizes):**

- Awarded Postdoc-Mobility grant for the project «Multilevel training of DeepONets – multiscale and Multiphysics applications», Swiss National Science Foundation, carried out at Brown University, 2 years, 2022-2024.
- Plenary talk «Enhancing Training of Deep Neural Networks Using Multilevel and Domain Decomposition Methods» at International Multigrid Conference, 2022.
- Invited speaker at several international conferences and workshops related to scientific machine learning, numerics, multilevel and domain decomposition methods, and computational mechanics, <https://kopanicakova.github.io/talks/>.

- **SUPERVISION:** Co-supervised 2 Bachelor students (BSc in Informatics), 4 Master students (1 on-going, MSc in Computational Science/Mathematics), 2 PhD students (both ongoing, PhD in Computational Science), 6 student assistants/interns.

- **SCIENTIFIC PRODUCTION:** <https://scholar.google.com/citations?user=OQqwn7wAAAAJ&hl=en>.

- **5 MOST RELEVANT PAPERS, Google Scholar Id: OQqwn7wAAAAJ, h-index: 8**

1. Kopaničáková, A., Kothari, H., Karniadakis G., Krause R. (2023). Enhancing training of physics-informed neural networks using domain-decomposition based preconditioning strategies: Under review in SIAM Journal on Scientific Computing (SISC). <https://arxiv.org/pdf/2306.17648.pdf>
2. Gratton S., Kopaničáková, A., Toint Ph. (2023). Multilevel Objective-Function-Free Optimization with an Application to Neural Networks Training. Accepted for publication in SIAM Journal on Optimization (SIOPT). <https://arxiv.org/abs/2302.07049>
3. Kopaničáková, A., Kothari, H., Krause R. (2023). Nonlinear field-split preconditioners for solving monolithic phase-field models of brittle fracture. Computer Methods in Applied Mechanics and Engineering (CMAME), 403, 115733. <https://www.sciencedirect.com/science/article/pii/S0045782522006880>
4. Kopaničáková, A., Krause R. (2022). Globally convergent multilevel training of deep residual networks. SIAM Journal on Scientific Computing (SISC), 0, S254-S280. <https://epubs.siam.org/doi/abs/10.1137/21M1434076>
5. Kopaničáková, A., Krause R. (2020). A recursive multilevel trust region method with application to fully monolithic phase-field models of brittle fracture. Computer Methods in Applied Mechanics and Engineering (CMAME), 360, 112720. <https://www.sciencedirect.com/science/article/pii/S0045782519306085>

- **REVIEWING ACTIVITIES:** Computer methods in Applied Mechanics and Engineering, SIAM Journal of Scientific Computing, Numerical Linear Algebra with Applications

- **COLLABORATIONS:** Zuse Institute Berlin, Germany; University of Siegen, Germany; University of Southampton, United Kingdom; Swiss National Supercomputing Center, Switzerland; Università della Svizzera italiana, Switzerland; ETH Zurich, Switzerland; Sandia National Lab, USA; Brown University, USA; University of New Mexico, USA; ANSYS, USA; University of Toulouse, France; Université de Namur, Belgium

- **TEACHING ACTIVITIES:** Substitute lecturer (2022): Solution and Optimization Methods for Large Scale Problems. Teaching assistant (2017-2019): Solution and Optimization Methods for Large Scale Problems, Calculus, Functional and Numerical Analysis, Multiscale Methods, Optimization Methods, Enterprise Resource Planning