

Postdoctoral positions

Statistical physics of attention and sequence modelling

Lausanne, Switzerland | Prof. Lenka Zdeborová

The Statistical Physics of Computation Laboratory (SPOC) at EPFL invites applications for postdoctoral positions on the theoretical foundations of learning with attention and sequence models. The positions are supported by **SPASM-net, an ERC Advanced Grant funded by the Swiss State Secretariat for Education, Research and Innovation (SERI)**.

Research

How do data structure, architecture and training dynamics determine what neural networks learn? We develop analytically tractable models, using statistical physics, high-dimensional probability and numerical experiments to uncover mechanisms relevant to modern AI.

Research directions include:

- Learning with attention: feature learning, generalization and phase transitions.
- Long sequences and structured data: masked learning and architectural biases.
- Training dynamics, sample and computational complexity, and in-context learning.

Profile

We seek candidates with a PhD (completed by the start date) in physics, mathematics, statistics, computer science or a related field, strong analytical skills, and a taste for independent, interdisciplinary research. Applicants from adjacent fields are welcome; prior expertise in every topic or in statistical physics methods is not required.

Conditions

The initial appointment is for **two years, with the possibility of extension**. EPFL offers a generous postdoctoral salary and excellent research conditions in an international environment spanning physics, mathematics and machine learning. The starting date is flexible, by mutual agreement.

How to apply

Email lenka.zdeborova@epfl.ch with your CV and publication list, a link to one representative paper, and a short description of your research interests and preferred starting date. Please use the subject **"SPASM-net postdoc application"**. References may be requested later. Informal enquiries are welcome. Applications will be considered on a rolling basis. **The interview process will begin in October 2026; early applications are encouraged.**

www.epfl.ch/labs/spoc/