Carl von Ossietzky

Universität
Oldenburg

Institut für PHYSIK

Theoriekolloquium

Am **18. Januar 2024** um **14.15 Uhr** im **Raum W2 1-143** hält

Herr Prof. Dr. Bernd Rosenow (Leipzig)

einen Vortrag mit dem Titel

Statistical Physics Meets Machine Learning:
Insights from Random Matrix Theory and Ultra-Wide Networks

We explore the interplay between statistical physics and machine learning, emphasizing the role of random matrix theory in analyzing neural network weight matrices. We will commence with insights into the behavior of ultra-wide networks from the viewpoint of neural network Gaussian processes. Taking into account realistic properties of stochastic gradient descent dynamics, a modification of the fluctuation dissipation theorem is found, giving rise to suppressed weight fluctuations in the direction of small Hessian eigenvalues. Lastly, we will discuss some aspects of feature learning, emphasizing its centrality in modern machine learning paradigms.

Interessierte sind herzlich eingeladen.

gez. Prof. Dr. Andreas Engel