Einladung zum Oberseminar Dynamische Systeme und Kontrolltheorie

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CayleyPy: From Rubik's Cube to Holographic Duality in AI Networks

Starting from Rubik's Cube and pathfinding on enormous Cayley graphs with up to 10^{100} vertices, I will introduce CayleyPy, a research project combining AI, group theory, and mathematical physics. Neural networks and large-scale search enable efficient discrete optimisation and the discovery of new mathematical conjectures, while CayleyPy-AutoProof harnesses modern LLMs to develop proofs.

We present AI-holography, a programme inspired by holographic string dualities (AdS/CFT). Its central hypothesis is that strings holographically dual to system states could provide optimal embeddings, paving the way for more effective, broadly applicable AI methods grounded in mathematics and mathematical physics.

We will survey our results, including new conjectures, proposed constructions, and progress toward proofs. Our roadmap begins with Cayley graphs of symmetric groups, extends to more complicated groups arising in quantum computing, and ultimately aims to bring these ideas to general AI systems.

Ort: Mathematik Ost, Seminarraum 01.003 Zeit: Montag, 07.12.2026 11:00 s.t.

Zu diesem Vortrag laden wir Sie herzlich ein.

gez. Sergey Dashkovskiy