

Plenary Talk PV X Thu 9:45 Kurt-Alder HS Chemie
**Towards Solving Computational Challenges in Lattice Field
Theory: From Deep Learning to Quantum Computing** —
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In lattice field theory, several parameter regimes remain inaccessible to conventional Monte Carlo methods, including topological terms, non-

zero baryon density, and real-time dynamics. Using lower-dimensional benchmark models as examples, I will review new approaches towards overcoming these challenges, based on deep learning, tensor networks, and quantum computing. Finally, I will discuss the requirements for integrating these methods into (3+1)-dimensional lattice simulations in the future, with a focus on Lattice QCD.