

A SOCIETY OF PHYSICS STUDENTS (SPS)

presents: PHYSICS ALUMNI SERIES SEMINAR

Accelerating Determinant Quantum Monte Carlo with Artificial Neural Networks:

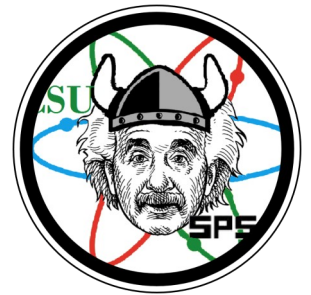
***A foray into the world of machine learning
for quantum many-body systems.***



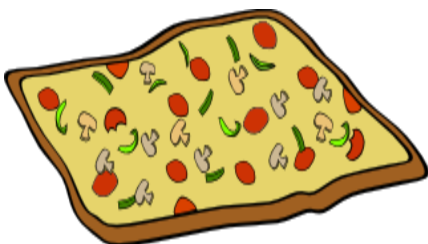
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BS-Honors Physics, CSU 2013



Machine learning is emerging as a powerful tool to both augment old and inspire new approaches for studying condensed matter systems. Several types of models from basic machine learning, as well as those from deep learning, have now been implemented to study and predict phase boundaries, construct wavefunctions using quantum state tomography, and accelerate a variety of numerical simulations. Such innovations have piqued the curiosity of theorists and experimentalists alike, and many are considering the efficacy of these methods in their own research. Inspired by the self-learning Monte Carlo technique, we employ artificial neural networks to abate the computational bottlenecks in determinant quantum Monte Carlo as applied to the Holstein Hamiltonian. In this talk, I intend to briefly introduce concepts related to the quantum many-body problem and machine learning, highlight our research, and close with time for discussion.



WHERE SR – 151

WHEN 11:30 – 12:20

Thursday, April 18, 2019

