

Seminar/Talk

Neural quantum states for fermionic real-time dynamics in the t-J model and three band Emery model

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Host: Maksym Serbyn

Abstract: Simulating the real-time dynamics of strongly correlated electrons remains a major computational challenge. I will present our approach based on transformer-based neural quantum states (NQS), where many-body wavefunctions are represented by neural networks and their time evolution is learned by minimizing the residual of the time-dependent Schrödinger equation. I will discuss recent insights into the tNQS framework, particularly regarding its accuracy and variational bias, and demonstrate its application to quantum quenches in the t-J model, a paradigmatic effective model of doped Mott insulators relevant to cuprate superconductors. Finally, I will present preliminary results on extending this approach to the three-band Emery model, providing a first step towards studying real-time dynamics in a more microscopic description of cuprates.

Thursday, December 10, 2026 11:00am - 12:00pm
Sunstone Bldg / Ground floor / Big Seminar Room A

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