Joint Quantum Seminar

Wednesday, February 26, 4:05 pm
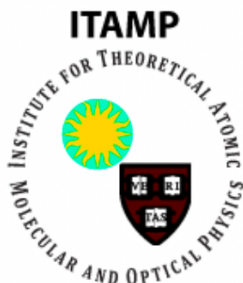**Jefferson 250**

Prof. Pavel Lougovski

Oak Ridge National Laboratory

"Lattice Gauge Quantum Field Theories in the Age of Quantum Computers"

Abstract:
Simulating real time dynamics of quantum field theories (QFTs) such as quantum chromodynamics poses a significant challenge in fundamental physics. Quantum computers may be able to help and recent progress in designing and analyzing scaling of quantum simulation algorithms for various QFTs is encouraging. In this talks we will discuss quantum and quantum-classical simulation strategies for the Schwinger model – quantum electrodynamics in 1+1 dimension. We will present a resource efficient quantum algorithm based on Trotter product formulae and provide a rigorous error analysis. We will briefly discuss its generalizations to 2+1 dimensional models. We will give an outlook on challenges and future opportunities in the Schwinger model simulations.

Refreshments will be provided at 4:05 PM
Guest Presentation will begin at 4:30 PM