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# INPP Seminar | Extending the Frontier of Predictive Ab Initio Methods: Recent Developments and Outlook, Jan. 17

January 17, 2017

Categories: Events

Tags: Institute of Nuclear and Particle Physics, NPP Seminar, physics and astronomy events, Titus Morris

The Institute of Nuclear and Particle Physics (INPP) presents Titus Morris, of University of Tennessee/Oak Ridge National Lab, presenting “Extending the Frontier of Predictive Ab Initio Methods: Recent Developments and Outlook,” on Tuesday, January 17, at 4 p.m. in Edwards Accelerator Lab, Roger W. Finlay Conference Room.



Titus Morris

**Abstract:** The in-medium similarity renormalization group (IM-SRG) is a recent many-body framework capable of treating medium mass nuclei using only few-nucleon forces. Recent technical developments, like the derivation of shell model interactions, have extended its reach to essentially all medium-mass nuclei. When combined with new, accurate, chiral forces rooted in underlying QCD, the IM-SRG provides a consistent framework for producing a predictive description of both energies and observables. In this talk I will review the IM-SRG framework, and then show selected results spanning isotopic chains from oxygen to tin, and compare those with results from other methods where available. I will then discuss preliminary results from other observables like transition operators. Finally, I will present the outlook for future IMSRG calculations, and how they can be improved upon.