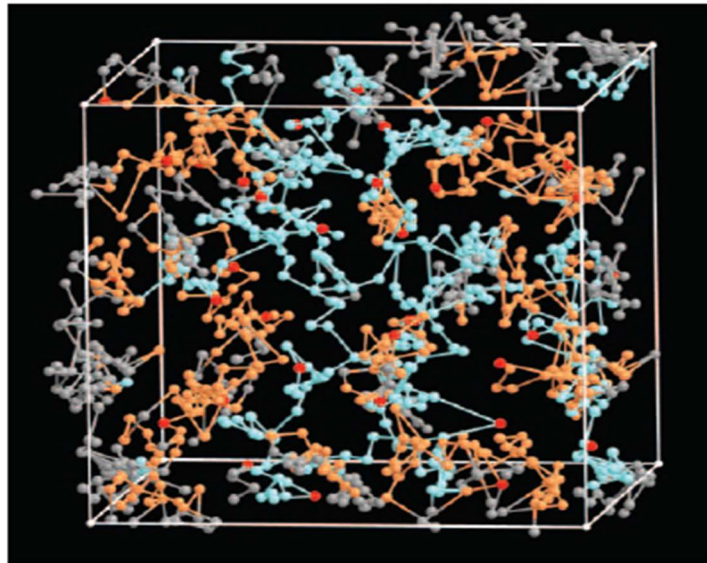


Graduate Mathematics Seminar

Path Integral Quantum Monte Carlo Calculations of Light Nuclei

Dr. Rong Chen

Children's Hospital Los Angeles



Abstract: Quantum Monte Carlo (QMC) methods, which are based on ab-initio principle and featured by their accuracy and efficiency, have been successfully used in various physics and chemistry calculations and beyond. Among them, Path Integral Monte Carlo (PIMC) method, in particular, by nature, has the advantage of its capability of directly and accurately calculating expectation values of important operators which do not commute with Hamiltonian. In this talk, I describe a path-integral ground-state quantum Monte Carlo method for light nuclei. I show how to efficiently update and sample the paths with spin-isospin dependent and spin-orbit interactions. I apply the method to the triton and alpha particle using both local chiral interactions with next-to-next-to-leading-order and the Argonne interactions.

When: Monday, August 30, 2021, 6:00 – 7:00 pm

Where: Zoom

One University Drive, Camarillo, California 93012-8599 Tel: (805) 437-8967 Fax: (805) 437-8864 www.csuci.edu