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**projective variational study on low-temperature quantum magnetism in Na4Ir3O8** RYUICHI SHINDOU, ICQM, School of Physics, Peking University — Na4Ir3O8 is one of candidate materials of three-dimensional quantum spin liquid Mott isnulator, where Ir J=1/2 spin forms a hyperkagome lattice, a corner-sharing triangle network lattice with spin frustration. Due to lack of spatial inversion symmetries and heavy atom nature of Iridium, the system possesses larger anisotropic exchange interactions. In fact, preceding theories based on ab-initio band calculation show that Dzyaloshinskii-Moriya (DM) interaction is on order of 10 percent of isotropic exchange interaction, which could play vital role of highly competing grand state energetics in Na4Ir3O8. From transport experiments, the system is also known to be in weak Mott insulating regime, where charge fluctuation cause larger multiple-spin interactions. Employing variational analyses based on projective(fermionic) construction of many-body spin wavefunctions, we will reconsider possible quantum spin ground states in the hyperkagome antiferromagnetic Heisenberg model with anisotropic exchange and multiple-spin interactions of Na4Ir3O8. Starting from these states, we will discuss possible magnetic excitations and compare them with reported experiments.

Ryuichi Shindou
ICQM, School of Physics, Peking University

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