

# Quantum Magnetism of Cold Atoms in an Optical Lattice

Y. Takahashi

Graduate School of Science, Kyoto University, Japan

First, I give an overview of past and current research on the topic of cold atoms, with special emphasis on the studies of the quantum magnetism of cold alkali atoms in an optical lattice. These include quite recent works on the observation of quantum magnetism of Fermi gas in an optical lattice. I also present some of our recent results towards the study of quantum magnetism for alkaline-earth-like atoms of ytterbium(Yb), such as the formation of an SU(6) Mott insulator of an atomic Fermi gas realized by large-spin Pomeranchuk cooling, the formation of Lieb lattice for the study of flat band ferromagnetism, and a Bose-Fermi dual Mott insulator.

Section: QG - Quantum gases

Keywords: quantum magnetism, quantum gas, optical lattice, cold atom

INVITED PAPER