

# Spin Liquid and Topological Insulator in Weak Mott Regime

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We investigate possible spin liquid and topological insulator phases in transition metal oxides. In particular, we focus on weak Mott insulator regime where there may be substantial charge fluctuations. We discuss the roles of spin-orbit coupling and lattice distortions for the emergence of these phases in 5d transition metal oxides. In addition, we consider the so-called topological Mott insulator phase and describe low energy properties of such system. Possible connections to various experiments on  $\text{Na}_4\text{Ir}_3\text{O}_8$  and Pyrochlore Iridates  $\text{A}_2\text{Ir}_2\text{O}_7$  are discussed.