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**Topological and unconventional magnetic states in transition metal oxides<sup>1</sup>**

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In this talk I describe some recent work on unusual correlated phases that may be found in bulk transition metal oxides with strong spin-orbit coupling. I will focus on model Hamiltonian studies that are motivated by the pyrochlore iridates, though the correlated topological phases described may appear in a much broader class of materials. I will describe a variety of fractionalized topological phases protected by time-reversal and crystalline symmetries: The weak topological Mott insulator (WTMI), the TI\* phase, and the topological crystalline Mott insulator (TCMI). If time permits, I will also discuss closely related heterostructures of pyrochlore iridates in a bilayer and trilayer film geometry. These quasi-two dimensional systems may exhibit a number of interesting topological and magnetic phases.

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