

Spin-orbital physics in frustrated vanadium oxides

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The study of spin frustration and orbital physics is one of the most exciting frontiers of contemporary research in condensed matter physics. In my talk, I will focus on the role of orbital degrees of freedom in vanadium oxides, which are the prime examples of frustrated magnets. In my talk I will discuss AV_2O_4 -compounds (ZnV_2O_4 , MnV_2O_4 and CaV_2O_4) and show how the competition between the super-exchange interaction between localized spins and orbitals, and their interaction through relativistic on-site spin-orbit interaction, and the coupling of orbitals and spins to the lattice leads to a variety of interesting ground states and elementary excitations.