



Physics Colloquium

Tuesday, 17 November 2020 at 17:15

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From transparent metals to magnetics. Electron filling in transition metal oxides holds the key

Electronic occupation of atomic orbitals is a key parameter that governs the properties of atoms and solids. Transition metal oxide perovskite and related structures, illustrate in the clearest possible way, the dramatic importance of the fine details of electronic occupation that allow to engineer at which: ferroelectric, excellent transparent metals, correlated insulators and magnetic metals or insulators.

We shall review recent progress, with focus on epitaxial thin films of correlated metals as transparent conductors (for instance, SrVO_3) and on the role of epitaxial strain on controlling the orbital filling in some magnetic oxides (for instance $\text{La}_{1/2}\text{Sr}_{1/2}\text{MnO}_3$ and LaNiO_3). We will describe in-operando voltage-controlled tuning of the orbital occupation in LaNiO_3 .

