

Exploring the electron transfer at cuprate/manganite interfaces

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The interface effects in cuprate/manganite multilayers are the subject of many studies, which are focused not only on superconducting properties of antagonistic $\text{YBa}_2\text{Cu}_3\text{O}_7$ (YBCO), but also on its magnetic and electronic properties. In this study we will present our last investigations that proved that in $\text{Nd}_{1-x}(\text{Ca}_{1-y}\text{Sr}_y)_x\text{MnO}_3/\text{YBCO}/\text{NCSMO}$ (NYN) trilayers, the interfacial electron transfer and the orbital reconstruction of the interfacial Cu ions depend significantly on hole doping x , strontium ratio y , and the subsequent charge/orbital order of the manganite. Driven by the chemical potential difference between NCSMO and YBCO, this interface phenomena can potentially lead to combined superconducting/charge-ordered quantum states in YBCO that can be adjusted via manganite layers and external control parameters like magnetic field or photons.

Position

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