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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 YBa2Cu3O7(YBCO), but also on its magnetic and electronic properties. In this study we will present our last investigations that proved that in Nd1-x(Ca1-ySry)xMnO3/YBCO/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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