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Electrical properties of interfaces in high-T_c superconducting heterostructures MAARTEN VAN ZALK, JOS BOSCHKER, MENNO VELDHORST, ALEXANDER BRINKMAN, HANS HILGENKAMP, Condensed Matter Physics and Devices Group, MESA+ Institute for Nanotechnology, University of Twente — Electrical contacts between materials of different functionality are often required, both for technological applications as well as for fundamental research. However, contacts between different complex oxides frequently do not behave like expected. For example, it is well known that tunnel junctions are difficult to fabricate from high-T_c superconductors, due to the presence of a degraded, non-superconducting layer underneath the tunnel barrier. We investigated the interface properties of a number of different oxide heterostructures, prepared by pulsed laser deposition. Specifically, the causes of non-ideal interface behavior, such as changes in the stoichiometry, oxygen deficiency, structural changes and electronic reconstruction, were investigated.

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