

O 92: Invited talk (Ralph Claessen)

Time: Friday 13:15–14:00

Location: HE 101

Invited Talk

O 92.1 Fri 13:15 HE 101

From surface to interface physics: Hard x-ray photoemission spectroscopy of oxide heterostructures — ●RALPH CLAESSEN —

Physikalisches Institut, Universität Würzburg, Am Hubland, D-97074 Würzburg, Germany

The electronic and magnetic surface properties of transition metal oxides (TMO) often deviate from their bulk behavior due to atomic and electronic reconstructions related to the ionic nature of these materials. Such surface instabilities represent a major obstacle for studying TMO by experimental surface probes, like e.g. photoelectron spectroscopy (PES) which gives direct access to the microscopic electronic structure, but under conventional conditions is limited to an information depth

of a few atomic layers only.

On the other hand, it has recently been demonstrated that the same reconstruction phenomena can also be utilized to control the *interface* in epitaxial oxide heterostructures with a polar discontinuity, opening promising perspectives for novel functionalities not present in the bulk. A prominent example is the formation of a high-mobility 2D electron system at the interface of the band insulators LaAlO_3 and SrTiO_3 . In my presentation, I will discuss the interface physics of such heterostructures and show how the extension of PES to higher photon energies up to the hard x-ray regime (HAXPES) may provide useful spectroscopic information on the buried interfaces, using different heterostructure systems as examples.