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Electronic and magnetic effects at complex oxide interfaces

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Remarkable electronic and magnetic behavior results from electronic reconstruction at interfaces in complex oxides. In recent years this has been strikingly shown especially for interfaces to SrTiO_3 , for example with LaTiO_3 and LaAlO_3 . Depending on the atomic arrangement of these interfaces, they can become conducting, remain insulating, show magnetic activity and even become superconducting. An important aspect concerns the role of oxygen vacancies, it is not completely clear yet to what extent they are decisive for some of these properties. In this talk I will discuss recent experimental and theoretical studies on such interfaces.