

# Condensed Matter Seminar

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**Title: Tunability of artificial interface phases in  $\text{LaAlO}_3/\text{SrTiO}_3$  heterostructures**

Research into new concepts for oxide-electronic devices has been enriched by the emerging field of functional interfaces. A high control of the materials down to the atomic level enables the improvement of existing oxide devices, like magnetic tunnel junctions, but also the formation of new artificial interface phases. Previous work revealed the existence of a metallic electron gas at the interface between the two band-insulators,  $\text{LaAlO}_3$  and  $\text{SrTiO}_3$ , for a certain atomic arrangement. Several studies on single epitaxial connections between  $\text{LaAlO}_3$  and  $\text{SrTiO}_3$  have revealed them to be either high-mobility electron conductors or insulating, depending on the atomic stacking sequences. In addition to discussing these aspects and presenting new results, the role of oxygen vacancies will be addressed.