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Electronic structure of the interfacial $LaAlO_3/SrTiO_3$ 2D electron gas

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The interface between $LaAlO_3$ and $SrTiO_3$, two good band insulators, was found in 2004 to be conducting with a high mobility [1] and, in some doping range, superconducting with a maximum critical temperature of about 200 mK [2,3]. I will describe recent experiments aiming at determining the origin of the electron gas. I will then discuss the transport properties of high mobility samples that display Shubnikov de Haas (SdH) oscillations [4]. In such high mobility samples, electric field tuning of the carrier density allows the electronic structure to be followed through analysis of the evolution of the SdH oscillations.

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