

2-dimensional Superconductivity at the LaAlO₃/SrTiO₃ Interface

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The interface between LaAlO₃ and SrTiO₃, two good band *insulators*, which was found in 2004 to be conducting [1], and, in some doping range, superconducting with a maximum critical temperature of about 200 mK [2] is attracting a lot of attention. The electronic structure of the system displays signatures of confinement and of the d-character of the carriers. This electron liquid has a thickness of a few nanometers at low temperatures and a low electronic density. Being naturally sandwiched between two insulators, it is ideal for performing electric field effect experiments that allow the carrier density to be tuned and the phase diagram of the system to be determined [3].

I will discuss in this presentation superconductivity, the phase diagram of the system and the link with bulk doped SrTiO₃, spin orbit [4], and an approach that allows superconducting coupling between different gases to be studied. I will also discuss recent thermopower measurements that allow access to very localized electronic states [5].

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[5] I. Pallegchi, F. Telesio, D. Li, A. Fête, S. Gariglio, J.-M. Triscone, A. Filippetti, P. Delugas, V. Fiorentini, and D. Marré, to appear in *Nature Communications*.