

## Unconventional Electronic and Magnetic States at the $\text{LaAlO}_3/\text{SrTiO}_3$ Interface

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The nature and control of the electronic structure at oxide heterointerfaces is an emerging research opportunity, enabled by modern atomic-scale growth and probe techniques for creating and studying new artificial interface states. Among the many issues that arise, the electrostatic boundary conditions that occur at heterointerfaces are often a very important determinant of the interface properties. This has been extensively studied for the (100) oriented  $\text{LaAlO}_3/\text{SrTiO}_3$  interface, a novel 2D system exhibiting both magnetism and superconductivity. After introducing this system, we will focus on recent x-ray spectroscopic studies [1] demonstrating  $d_{xy}$  ferromagnetism on the interface titanium, which has a number of potential implications for the superconducting state.

[1] J.-S. Lee, Y. W. Xie, H. K. Sato, C. Bell, Y. Hikita, H. Y. Hwang, & C.-C. Kao, *Nature Mater.* DOI: 10.1038/NMAT3674 (2013).

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