MAR12-2011-001178

Abstract for an Invited Paper
for the MAR12 Meeting of
the American Physical Society

Fundamental Properties of the 2-D Electron Liquid Generated by $LaAlO_3$-$SrTiO_3$ Interfaces[1]

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Extraordinary electron systems can be generated at well-defined interfaces between complex oxides. Much more so than the 2-D electron gases formed at interfaces between conventional semiconductors, the electron systems at oxide interfaces may be shaped by the character of the underlying ionic lattice and be characterized by substantial correlations. Focusing on the electron liquid produced by n-type $LaAlO_3$-$SrTiO_3$ interfaces, I will present our studies of such structures and discuss in particular our results pertaining to the magnetism, superconductivity, and negative electronic compressibility of these systems.

[1]Most of this work was performed together with Ray Ashoori, Werner Dietsche, Thilo Kopp, Lu Li, Natalia Pavlenko, Christoph Richter, and George Sawatzky.