

## **Two-dimensional Electron Systems at Oxide Interfaces**

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Two-dimensional electron gases based on conventional semiconductors such as Si or GaAs play a pivotal role in fundamental science and technology. The high mobilities achieved enabled the discovery of the integer and fractional quantum Hall effects and are exploited in high-electron-mobility transistors.

Recent work has shown that two-dimensional electron systems can also exist at oxide interfaces [1]. These electron systems are characterized by properties that fundamentally differ from those of semiconductor interfaces. In the presentation I will provide an overview of our studies of these surprising electronic systems (see, e.g., [2,3]) and explore the potential of electron liquids at oxide interfaces for the use in nanoscale electronic devices.

[1] A. Ohtomo et al., *Nature* 419, 378 (2002).

[2] N. Reyren et al., *Science* 317, 1196 (2007).

[3] J. Mannhart and D.G. Schlom, *Science* 327, 1607 (2010).