



490th ASRC Seminar

Date: 15:00 - 16:30, 22nd November

Location: Meeting room 103, ASRC Building

Speaker: Dr. Ariando

(National University of Singapore)

Title: Emerging properties at atomically
engineered oxide interface

Two-dimensional electron system at the interfaces between polar and nonpolar oxide systems (e.g. the $\text{LaAlO}_3/\text{SrTiO}_3$ interface) has been shown to exhibit rich properties such as superconductivity and ferromagnetism or coexistence of different phases in the form of nanoscale electronic phase separation. These multifunctional properties are strongly believed to originate from the polarization discontinuity at the interface between the two oxides, leading to the so-called electronic reconstruction. However, there are many open questions regarding the true nature of this two dimensional electron gas, e.g., why the charge density is one order of magnitude lower than the theoretical expected value? why the interface with amorphous overlayer and different crystalline direction can produce a similar conductivity? and what is the true mechanism behind the observed conductivity and various electronic or magnetic phases? In this talk I will discuss various studies that we have performed to try to answer all of the above questions in order to better understand the nature of the two dimensional electron gas at such interfaces and to be able to tune its properties.



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