

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Magnetoresistance Anomalies in $\text{LaAlO}_3/\text{SrTiO}_3(110)$: Fingerprints of Flat d_{yz}/d_{xz} Band along [1-10] zigzag chain HAIJIAO MA, NUSNNI-Nanocore and Physics Department, NUS, QINFANG ZHANG, Yancheng Institute of Technology, YANG LIU, Laboratoire SPMS, Ecole Centrale Paris, ANIL ANNADI, NUSNNI-Nanocore, NUS, WENXIONG ZHOU, NUSNNI-Nanocore and Physics Department, NUS, SHENGWEI ZENG, NUSNNI-Nanocore, NUS, THIRUMALAI VENKY VENKATESAN, ARIANDO ARIANDO, NUSNNI-Nanocore and Physics Department, NUS, ARIANDO RESEARCH GROUP COLLABORATION¹, Q. F. ZHANG TEAM, Y. LIU TEAM — We report novel features in the in-plane magnetoresistance (MR) of anisotropic two-dimensional electron gas (2DEG) at $\text{LaAlO}_3/\text{SrTiO}_3(110)$ heterostructures, which unveil the existence of a flat band in this system. One of the striking features is an anisotropy of the MR with a “ d_{z^2} -wave”-like symmetry upon rotating the magnetic field H within (110) plane at low temperature, which is caused by the existence of flat d_{yz}/d_{zx} band. Combining with theoretical and experimental results, we confirm that a flat d_{yz}/d_{xz} band formed along [1-10] Ti-O-Ti zigzag chain direction which might be very interesting for searching for topological state such as in superconducting regime.

¹Ariando Research Group is part of Department of Physics and of NUSNNI-NanoCore, the inter-faculty and multidisciplinary Nano-Institute at the National University of Singapore.

Haijiao Ma
NUSNNI-Nanocore and Physics Department, NUS

Date submitted: 14 Nov 2014

Electronic form version 1.4