



Contribution ID: 101

Type: Talk

In-situ ARPES study of $\text{La}_{2/3}\text{Sr}_{1/3}\text{MnO}_3$ / SrTiO_3 thin films: Fermi Surface Topology

Friday, 16 September 2011 14:55 (25 minutes)

Hole-doped manganese perovskites $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$ (LSMO) have stimulated a renewed scientific and technological interest because of their complex electronic and magnetic properties. Angle-resolved photoemission (ARPES), which directly probes the k -dependent electronic structure, could not be used to study LSMO single crystals because of their isotropic cubic symmetry (no preferential cleaving plane). The only alternative approach is to grow high-quality thin films and measure them in-situ ARPES.

Our pioneering work [1] provided essential information about the low-energy electronic structure of LSMO, such as broad dispersive peaks and the clear observation of k -dependent spectral weight at the Fermi level.

Here we report the complete topology of the Fermi Surface (FS) for LSMO thin films grown on SrTiO_3 substrates and discuss our data in relation to the existing theoretical calculations and ARPES results of the similar layered manganites. The FS consists of an electron pocket centered at G point, formed by the (out-of-plane) $3z^2-r^2$ electronic states, and hole cuboids centered at M points, mainly of (in-plane) x^2-y^2 character.

[1] M. Shi et al., Phys. Rev. B 70 (2004) 140407

Please specify the session

Multiple Order Parameter Systems

Please specify poster or talk

talk

Primary author: Dr FALUB, Mihaela (Paul Scherrer Institut, Swiss Light Source)

Co-authors: Mr RAZZOLI, Elia (Paul Scherrer Institut, Swiss Light Source); Dr KREMPASKY, Juraj (Paul Scherrer Institut, Swiss Light Source); Prof. HRICOVINI, Karol (University Cergy-Pontoise, France); Dr PATTHEY, Luc (Paul Scherrer Institut, Swiss Light Source); Dr RADOVIC, Milan (Paul Scherrer Institut, Swiss Light Source); Dr SHI, Ming (Paul Scherrer Institut, Swiss Light Source); Dr PLUMB, Nicholas (Paul Scherrer Institut, Swiss Light Source)

Presenter: Dr FALUB, Mihaela (Paul Scherrer Institut, Swiss Light Source)

Session Classification: Multiple Order Parameter Systems

Track Classification: Multiple Order Parameter Systems