Poster-2-13

Investigating Strain-Dependent Magnetoresistance and Metal-Insulator Transition in LCMO Films at Cryogenic Temperatures Using Near-Field Techniques

Giuliano Esposito,[1] Gennady Logvenov,[2] Georg Christiani,[2] and Alexey Kuzmenko[1]

[1] *DQMP, University of Geneva, 1211 Geneva, Switzerland*
[2] *Max Planck Institute for Solid State Research, Heisenbergstraße 1, D-70569 Stuttgart, Germany*

Metal-insulator transitions (MITs) in complex oxides like manganites present intriguing phenomena with significant implications for fundamental physics and potential applications [1]. In this study, we investigate the MIT in manganites, focusing on the perovskite lanthanum calcium manganese oxide (LCMO). Scattering scanning near-field optical microscopy (s-SNOM) emerges as a powerful tool, offering high spatial resolution and sensitivity to local conductivity [2]. By Using s-SNOM, we explore the MIT in LCMO and its modulation under strain. Building upon successful applications in other materials like vanadium dioxide (VO_2) [3] and neodymium nickel oxide ($NdNiO_3$) [4], we present preliminary findings on the impact of strain on the MIT transition in LCMO. We will present preliminary results on colossal magneto resistance on LCMO where different strain translates to different transition temperatures. [5]

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