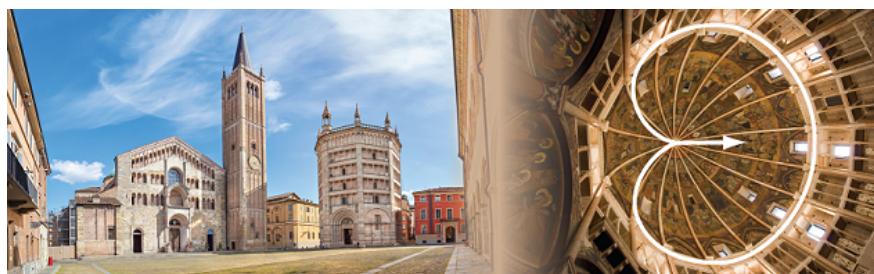


15th International Conference on Muon Spin Rotation, Relaxation and Resonance



Contribution ID: 267 Contribution code: O-5

Type: Oral

Studying the evolution of the metallic state in LaNiO₃ from a single crystal to superlattices with β -detected NMR

Monday, 29 August 2022 12:20 (20 minutes)

The rare-earth nickelates (RNiO₃) are a prototypical example of a metal-insulator transition. Among the RNiO₃, LaNiO₃ is unique in remaining metallic, although highly correlated. Interestingly, superlattices with insulating interlayers of LaAlO₃, can be driven insulating and antiferromagnetic if they are thin enough¹. We have used ⁸Li β -detected NMR (β -NMR), to study LaNiO₃ as a single crystal, thin film, and in superlattices with LaAlO₃. We observe biexponential spin-lattice relaxation which we attribute to electronic phase separation^{2,3}. In the single crystal and bulk-like thin film, both phases appear metallic². However, in the ultrathin layers of the superlattices, the behaviour of one of the phases appears magnetic at low temperature³.

1. A. V. Boris et al., Science 332, 937 (2011)
2. V. L. Karner et al., Phys. Rev. B 100, 165109 (2019)
3. V. L. Karner et al., Phys. Rev. B. 104, 205114 (2021)

Primary authors: KARNER, Victoria (TRIUMF); Dr BENCKISER, Eva (Max Planck Institute for Solid State Research); Dr BORIS, Alexander V. (Max Planck Institute for Solid State Research); Dr CHATZICHRISTOS, Aris C. (UBC); Dr CRISTIANI, Georg (Max Planck Institute for Solid State Research); Dr CORTIE, David L. (University of Wollongong); DEHN, Martin; Dr FOYEVSTOV, Oleksandr (Stewart Blusson Quantum Matter Institute); Dr FOYEVSTOVE, Kateryna (Stewart Blusson Quantum Matter Institute); FUJIMOTO, Derek (University of British Columbia); KIEFL, Rob (University of British Columbia); Dr BERNHARD, Keimer (Max Planck Institute for Solid State Research); Dr LEVY, C.D.P. (TRIUMF); Dr LI, Ruohong (Triumf); Dr GENNADY, Logvenov (Max Planck Institute for Solid State Research); Mr MCFADDEN, Ryan M. L. (UBC); Dr MITCHELL, John F. (Argonne National Laboratory); Dr MORRIS, Gerald D. (TRIUMF); Dr PEARSON, M.R. (TRIUMF); Dr STACHURA, Monika (TRIUMF); TICKNOR, John (University of British Columbia); Dr WROBEL, F.; Dr ZHANG, Junjie (Argonne National Laboratory); Prof. MACFARLANE, W. Andrew (UBC)

Presenter: Prof. MACFARLANE, W. Andrew (UBC)

Session Classification: Oral contributions

Track Classification: Strongly correlated electron systems