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Manipulating the ground state in nickelates using proximity with magnetic layers

Wednesday, 30 October 2019 09:00 (20 minutes)

Transition metal oxides (TMO) are a class of materials where the charge, orbital, magnetic, and spin degrees of freedom are mutually connected. Interfacing different TMOs offers the possibility to act on each of these degrees of freedom, tailoring new materials with desired properties. In this talk, I will show the effect of the presence of a magnetic proximity layer on the ground state of neodymium nickelate (NNO) interfacing thin NNO films with ferro- and antiferromagnetic manganite layers (strontium doped lanthanum manganite –LSMO) grown via pulsed laser deposition (PLD). Angle resolved photoemission spectroscopy (ARPES) and X-ray magnetic circular dichroism (XMCD), supported by momentum-resolved density fluctuation (MRDF) theory, revealed the suppression of the PM metal –AFM insulator transition in NNO thin films, and the emergence of a new FM metal ground state. This work paves the way for tailoring magnetic properties in different oxides, where already existing magnetic ordering can be tuned using proximity effects.

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