

Spin and charge stripes in trilayer nickelates

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Highly orbitally polarized trilayer nickelates represent a potential platform for searching for high- T_C superconductivity [1]. $\text{La}_4\text{Ni}_3\text{O}_8$, which has square-planar coordinated nickel, is one such material. It undergoes a semiconductor-insulator transition on cooling at $T_{SI} \sim 105$ K, which is accompanied by formation of charge stripes evidenced by X-ray scattering measurements [2]. These stripes will be discussed along with our recent finding that the ground state is magnetic and consists of antiferromagnetic spin stripes that are commensurate with the charge stripes [3]. The magnetic stripes are modeled as occurring within uncorrelated trilayers. Comparison of the charge and spin stripe order parameters reveals that, in contrast to single-layer nickelates and most transition metal oxides, the orders both appear at T_{SI} , suggesting a strong coupling between the two.

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References

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