

Nematic domains and resistivity in an itinerant metamagnet coupled to phonons

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The nature of the emergent phase near a putative quantum critical end point in the bilayer ruthenate $\text{Sr}_3\text{Ru}_2\text{O}_7$ has recently been a subject of intensive research. It has been suggested that this phase may possess an electronic nematic order and the two consecutive metamagnetic transitions discovered in the experiments can be explained by the nematic transitions. In this work, we investigate the possibility of nematic domain formation in an itinerant nematic-ordered phase coupled to lattice and estimate the resistivity due to the scattering of the electrons off the domain walls. Our results provide qualitative explanations for the dependence of the resistivity on the external magnetic field in $\text{Sr}_3\text{Ru}_2\text{O}_7$, strengthening the expectation that the emergent phase has a nematic order.

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