
Nuclear Magnetic Resonance Studies of Domain Walls in Antiferromagnetic CaFe_2As_2

N. Curro¹

¹*University of California, Department of Physics, One Shields Ave Address, Davis 95616, CA, USA*

Resistivity, magnetization and microscopic ^{75}As nuclear magnetic resonance (NMR) measurements in the antiferromagnetically ordered state of the iron-based superconductor parent material CaFe_2As_2 exhibit anomalous features that are consistent with the collective freezing of domain walls. Below $T^* \approx 10$ K, the resistivity exhibits a peak and downturn, the bulk magnetization exhibits a sharp increase, and ^{75}As NMR measurements reveal the presence of slow fluctuations of the hyperfine field. These features in both the charge and spin response are strongly field dependent, are fully suppressed by $H^* \approx 15$ T, and suggest the presence of filamentary superconductivity nucleated at the antiphase domain walls in this material.