

Abstract Submitted
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Influence of the antiferromagnetic spin density wave on the magnetoresistance of Cr¹ YEONG-AH SOH, RAVI KUMMAMURU, Dartmouth College — We have performed magnetotransport measurements on Cr films that are 350, 56, 43 and 18 nm thick. The magnetoresistance with the field perpendicular to the film plane shows a clear increase below the Neel temperature and is accompanied by an anomalous negative magnetoresistance at the Neel temperature. The orbital magnetoresistance satisfies the Kohler's rule in the paramagnetic state but violates it in the Neel state. The Hall resistance shows temperature dependence in the paramagnetic state, which was previously suggested to be indicative of a pseudogap [1]. We explain the above phenomena by the evolution of the electronic structure due to the formation of antiferromagnetic spin density wave, the influence of antiferromagnetic domain walls, and the existence of more than one scattering time. [1] "Quantum phase transition in a common metal", A. Yeh, Y-A. Soh, J. Brooke, G. Aeppli, T. F. Rosenbaum, and S. M. Hayden, *Nature (London)* **419**, 459 (2002).

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