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Direct probe of Fermi surface evolution at a pressure-induced quantum phase transition D.M. SILEVITCH, University of Chicago, YEJUN FENG, Argonne National Laboratory, A. PALMER, YISHU WANG, T.F. ROSENBAUM, University of Chicago — The nature of a material's Fermi surface is crucial to understanding its electronic, magnetic, optical, and thermal characteristics. Traditional measurements such as angle resolved photoemission spectroscopy and, de Haas-van Alphen quantum oscillations can be difficult to perform in the vicinity of a pressure-driven quantum phase transition. We demonstrate here that magnetic x-ray diffraction in combination with Hall effect measurements in a diamond anvil cell can provide valuable insight into the Fermi surface evolution in spin- and charge-density-wave systems near quantum phase transitions. In particular, we delineate the critical pressure and absence of Fermi surface reconstruction at the spin-flip transition in elemental chromium.

Daniel Silevitch
University of Chicago

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