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Time-resolved terahertz spectroscopy and Hall measurement on chromium vanadium thin films AMIR FARAHANI, SAEID KAMAL, Simon Fraser University, ERIC FULLERTON, University of California, San Diego, J. STEVEN DODGE, Simon Fraser University — We have measured the low-frequency dynamical conductivity of $Cr_{1-x}V_x$ thin films through the quantum phase transition at $x \approx 0.35$ using terahertz time-domain spectroscopy. From Drude model fits we have determined the plasma frequency ω_p of samples over concentrations $x = 0 - 0.1$ and temperatures 10–300 K. We have compared these to the Hall resistance R_H on the same samples and found that both reveal the opening of the spin-density wave gap. At high temperatures $\omega_p^2 \propto 1/R_H$, but as the temperature is lowered below 75 K, $1/R_H$ falls more rapidly than ω_p^2. We will relate these observations to a theoretical model based on a realistic Fermi surface.

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