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Induced Itinerant Antiferromagnetism in SrTiO3 BRANDON ISAAC, EVGENY MIKHEEV, CHRIS FREEZE, SUSANNE STEMMER, University of California, Santa Barbara — Interfaces between RTiO3 (R = Gd or Sm) and SrTiO3 grown by molecular beam epitaxy induce a high-density two-dimensional electron gas (2DEG). Such 2DEGs show evidence of strong electron correlation effects, including non-Fermi liquid behavior, and a non-trivial magnetoresistance. Here we present magneto-transport measurements of SmTiO3/SrTiO3/SmTiO3 quantum well structures to investigate induced, itinerant, antiferromagnetic ordering in the SrTiO3 through proximity to the SmTiO3. At low temperatures, the Hall effect, the longitudinal resistance, and the magnetoresistance all show evidence of itinerant antoferromagnetism. For example, the longitudinal resistance shows deviations from the logarithmic correction of weak localization, and the Hall effect indicates opening of a gap and loss of carriers. The results will be discussed in terms of a possible spin-density wave formation and gap opening on the Fermi surface.

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