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Microwave spectroscopic observation of phase transition between competing solids in wide quantum wells A.T. HATKE, B.A. MAGILL, B.H. MOON, L.W. ENGEL, NHMFL, Y. LIU, M. SHAYEGAN, L.N. PFEIFFER, K.W. WEST, K.W. BALDWIN, Princeton University — Within a narrow range of Landau filling (ν) near $\nu = 1$, a resonance in the microwave spectrum in high mobility two-dimensional electron systems is known to occur [1]. The resonance, characterized by a peak frequency (f_{pk}), is a signature of a pinned Wigner solid in which quasiparticles oscillate about their pinned positions. In wide quantum wells, at sufficiently large density, we observe an abrupt shift in f_{pk} vs ν as ν is decreased from 1. We interpret this jump to enhanced-f_{pk} vs ν as a solid-solid phase transition. dc transport measurements reveal a reentrant integer quantum Hall effect (RIQHE) [2], which we show has the same origin as the enhanced-f_{pk}.

[1] Chen et al., Phys. Rev. Lett. 91, 016801 (2003).
[2] Liu et al., Phys. Rev. Lett. 109, 036801 (2012).

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