

Abstract Submitted  
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**Microwave spectroscopic observation of the  $\nu = 1/2$  fractional quantum Hall Wigner solid** LLOYD ENGEL, ANTHONY HATKE, NHMFL, YANG LIU, MANSOUR SHAYEGAN, LOREN PFEIFFER, KEN WEST, KIRK BALDWIN, Princeton University — Microwave spectroscopic studies have revealed Wigner solidification of quasiparticles within a narrow range of Landau filling ( $\nu$ ) near the integer quantum Hall effect at  $\nu = 1$  [1] and the fractional quantum Hall effect at  $\nu = 1/3$  [2, 3]. Here, an observed resonance is taken as a signature of a pinned Wigner solid in which the quasiparticles oscillate about their pinned positions. In wide quantum wells (and double quantum wells), where interlayer and intralayer correlations can be of comparable magnitude, the even-denominator  $\nu = 1/2$  state is known to exist [4]. In this talk I will discuss recent microwave spectroscopic studies of the wide quantum well system that demonstrates the formation of a  $\nu = 1/2$  Wigner solid. Additionally, I will show that this  $\nu = 1/2$  Wigner solid undergoes a first order phase transition to the recently observed bilayer solid, observable as a region of coexistence of the two solids.

[1] Chen et al., Phys. Rev. Lett. 93, 206805 (2004).

[2] Zhu et al., Phys. Rev. Lett, 105, 126803 (2010).

[3] Archer et al., Phys. Rev. Lett, 111, 146804 (2013).

[4] Manoharan et al., Phys. Rev. Lett. 77, 1813 (1996); Suen et al., Phys. Rev. Lett. 68, 1379 (1992); Eisenstein et al., Phys. Rev. Lett. 68 1383 (1992).

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