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Resonance in Microwave Spectra of Bilayer Hole Sample ZHIHAI WANG, Princeton University, Y. CHEN, Princeton University, G. SAMBANDAMURTHY, Princeton University, L. W. ENGEL, NHMFL, D. C. TSUI, Princeton University, E. TUTUC, IBM, M. SHAYEGAN, Princeton University — We report microwave spectra of a bilayer hole sample, with nominal interlayer distance d $\approx$ 230 Å and balanced total density p$\approx$7.46 $\times 10^{10}$ cm^{-2}. The wafer was designed to suppress interlayer tunneling; dc transport studies [1] of other pieces of the wafer exhibited the interlayer-coherent quantum Hall effect at total Landau filling factor ν=1, with an insulating phase reentrant around it. In the present study, a clearly identifiable peak in the spectrum (Re(σ_{xx}) vs frequency) appears at 3.2 GHz as ν is decreased below $\sim$0.9. The peak frequency increases with decreasing ν to $\sim$ 5 GHz at ν =0.2. Though quite broad (Q$\sim$1) for ν >0.5, the resonance sharpens drastically as ν is decreased below that value, reaching Q$\approx$10 at ν=0.2. Particularly for ν <0.5, the resonance can be interpreted analogously to that observed in single layer 2D hole systems [2], as a pinning mode of a Wigner crystal. [1] E. Tutuc et al. , Phys. Rev. Lett. **91**, 076802 (2003). [2] C. C. Li et al., Phys. Rev. Lett. **79**, 1353 (1997).

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