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Melting of a bubble solid in the presence of disorder probed by microwave spectroscopy LLOYD ENGEL, ANTHONY HATKE, BYOUNG MOON, National High Magnetic Field Laboratory, GEOFF GARDNER, JOHN WATSON, Birck Nanotechnology Center, Purdue University, MICHAEL MANFRA, Department of Physics and Astronomy, and Station Q Purdue, Purdue University — Two dimensional electron systems can form several different types of solid phases. These solid phases are pinned by disorder and can exhibit a resonance in their microwave or rf spectrum due to oscillation within the residual disorder potential. Here we examine the effect of intentional disorder doping in the quantum well on the melting temperature of Wigner solids formed both of quasiparticles of the integer quantum Hall effect (IQHE) [1] and bubble and stripe phases [2] in high Landau levels through changes in the microwave resonance intensity. We observe that the presence of disorder increases both the resonance peak frequency and the melting temperature of the Wigner solids formed from quasiparticles of the IQHE but has limited effect on the bubble and stripe resonances. [1] Chen et al., Phys. Rev. Lett. 93, 206805 (2004). [2] Lewis et al., Phys. Rev. Lett. 93, 176808 (2004).

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