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**In-plane field induced anisotropy in the microwave/rf resonances of 2D electrons at the second excited Landau level** HAN ZHU, Princeton Physics, G. SAMBANDAMURTHY, SUNY Buffalo, L. ENGEL, NHMFL/FSU, D. C. TSUI, Princeton EE, L. PFEIFFER, K. WEST, The Bell Labs, Alcatel-Lucent Technologies — We report measurements of the microwave/rf diagonal conductivity of ultrahigh mobility 2D electron systems in GaAs/AlGaAs quantum wells, at the second excited Landau level (LL), with in-plane magnetic field $B_{ip}$. Previous measurements [1] at $B_{ip} = 0$ have found an essentially isotropic pinning mode resonance of the bubble phase near LL filling 4.15 to 4.4. As $B_{ip}$ is applied, with the rf electric field $E$ either parallel or perpendicular to $B_{ip}$, the peak frequencies $f_{pk}$ and resonance widths almost identically increase, probably due to stronger pinning as the electron wavefunction is being pushed closer to the GaAs/AlGaAs interface. However, $B_{ip}$ is found to induce anisotropy in the ratio of the integrated intensity $S$ over $f_{pk}$, which is thought to be proportional to the participating carrier density. As $B_{ip}$ is applied, $S/f_{pk}$ increases with $E$ perpendicular to $B_{ip}$ and decreases with them parallel. Similar behavior is found in the resonances from the Wigner crystal phase formed within the same LL. [1] R. Lewis et al., PRL 89,136804 (2002).

Han Zhu
Princeton Physics

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