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**Phonon mediated resonances in bilayer magnetodrag** GOKUL GOPALAKRISHNAN, SANGHUN AN, DONGKYUN KO, YUKO SHIROYANAGI, THOMAS GRAMILA, The Ohio State University, Physics Dept., LOREN PFEIFFER, KEN WEST, Bell Labs, Lucent Technologies — The properties of the 2-dimensional electron gas (2DEG) have been studied extensively in the integer and fractional quantum Hall regimes. Much less is understood about the 2DEG at intermediate fields, where thermal fluctuations are comparable to the size of the Landau-level spacing. We have explored this regime by measuring frictional drag, which probes electron-electron interactions, in a bilayer system at temperatures from 1.5K to 8.5K in fields smaller than 1T. In addition to an unusual overall field dependence, we have discovered a series of oscillations in the drag resistivity which are periodic in 1/B, but are distinct from variations in the density of states, as seen in Shubnikov-de Haas oscillations. These novel magnetodrag oscillations are consistent with a phonon mediated interlayer momentum transfer mechanism. Resonances are observed when the frequency of $2k_F$ phonons matches an integer multiple of the cyclotron frequency, and they are suppressed as the densities of the two layers are mismatched.

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