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Coulomb drag in graphene quantum Hall bilayer systems XIAOMENG LIU, Harvard University, LEI WANG, Columbia University, KIN CHUNG FONG, Raytheon BBN Technologies, YUANDA GAO, PATRICK MAHER, Columbia University, KENJI WATANABE, TAKASHI TANIGUCHI, National Institute for Materials Science, JAMES HONE, CORY DEAN, Columbia University, PHILIP KIM, Harvard University — Coulomb drag between electrons in closely spaced two-dimensional electron systems has provided an exciting avenue for research on quantum Hall bilayer systems. Employing dual-gated, encapsulated graphene double layers separated by a thin hBN dielectric, we investigate density tunable magneto and Hall drag in quantum Hall bilayer systems. Large variations of magneto-drag and Hall-drag are observed, which can be related to the Landau level (LL) filling status of both driving and drag layers. The measured drag resistivity tensor can be associated with the tensor product of the differential magneto-resistivity tensors of the drive and drag layers [1]. The temperature and field dependence of magneto-drag can be described in terms of the phase space for Coulomb scattering between LLs in the drag and drive layers. In the strong interaction regime and ultra-low temperature, we observe the effect of symmetry broken integer quantum Hall States in magneto and Hall drag signals. [1] F. von Oppen, S. Simon, and A. Stern, Phys. Rev. Lett. 87, 106803 (2001).

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