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Coulomb drag upturn in an undoped electron-hole bilayer in perpendicular and parallel magnetic fields CHRISTIAN MORATH, Sandia National Lab, JOHN SEAMONS, Space Dynamics Laboratory, JOHN RENO, MIKE LILLY, Sandia National Lab, N/A COLLABORATION — A low-temperature upturn of the Coulomb drag resistivity $\rho_D$measured in undoped electron-hole bilayer devices, possibly manifesting from formation of a superfluid condensate or density modulated state, was recently observed. Here the effects of perpendicular and parallel magnetic fields on the drag upturn are examined. Measurements of ρ_D and drive layer resistivity ρ_{xx-e} as a function of temperature and magnetic field in two uEHBL devices are presented. In $B_\perp$, the drag upturn was enhanced as the field increased up to roughly .2 T, beyond which oscillations in ρ_D and ρ_{xx-e}, reflecting Landau level formation, begin appearing. A small phase offset between those oscillations, which decreased at higher fields and temperatures, was also observed. In $B_{||}$, the drag upturn magnitude diminished as the field increased. Above the upturn regime, both ρ_D and ρ_{xx-e} were enhanced by $B_{||}$, the latter via decreased screening of the uniform background impurities. This work has been supported by the Division of Materials Sciences and Engineering, Office of Basic Energy Sciences, U.S. Department of Energy. Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy under Contract No. DE-AC04-94AL85000.

Christian Morath
Sandia National Lab

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