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Electrical Transport of an Electron-Hole Double Layer with a Middle Barrier[1] WU XING-JUN, Peking University, LIU RUIYUAN, Peking University, Rice University, LOU WENKAI, CHANG KAI, SKLSM, Institute of Semiconductors, CAS, SULLIVAN GERARD, Teledyne Scientific and Imaging, DU RUI-RUI, Peking University, Rice University — It was proposed that in a spatially separated electron-hole system like InAs-GaSb-based quantum wells, spontaneous excitonic ground states could form under proper conditions. Motivated by this prospect and with the advent of high quality materials grown by MBE, we explore low temperature electrical transport properties in InAS/GaInSb bilayers with a AlSb middle barrier. The devices were made with flip-chip techniques to facilitate dual-gate control of carrier densities. We will report preliminary results, and a brief discussion will be presented.

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