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Using Composite Fermions to Probe a Wigner Solid in 2D Hole Systems INSUN JO, YANG LIU, H. DENG, M. SHAYEGAN, L. N. PFEIFFER, K. W. WEST, K. W. BALDWIN, Dept. of Electrical Engineering, Princeton University, Princeton, NJ 08544 — We have studied a GaAs double-quantum-well structure that hosts an interacting, bilayer two-dimensional hole system with a large density difference between the two layers. At very low temperatures and large perpendicular magnetic field, we expect the two layers to exhibit distinct many-body states of holes: The high-density layer develops a Fermi sea of composite fermions when its last Landau Level is half-filled, while the holes in the low-density layer in the same magnetic field range are at very small fillings and should condense into a Wigner crystal. Via measuring the magneto-resistance of the bilayer system, we monitor signatures of the Wigner crystallization and melting

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