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Transport Studies of Strained-layer InAs/GaInSb Quantum Spin Hall Insulators[1] TINGXIN LI, LINGJIE DU, Rice University, WENKAI LOU, Institute of Semiconductors, CAS, XINGJUN WU, XIAOXUE LIU, ZHONGDONG HAN, CHI ZHANG, Peking University, GERARD SULLIVAN, AMAL IKHLASSI, Teledyne Scientific and Imaging, KAI CHANG, Institute of Semiconductors, CAS, RUI-RUI DU, Rice University and Peking University — We report on a new class of quantum spin Hall insulators (QSHI) in strained-layer InAs/GaInSb quantum wells, in which the bulk gaps can be achieved to ˜20 meV, enhancing by up to five folds as compared to the binary InAs/GaSb QSHI. We will present bulk gap measurement results using Corbino devices, and compare the results with band structure calculations. Remarkably, with consequently increasing edge velocity, the edge conductance at zero and applied magnetic fields clearly manifests time reversal symmetry -protected properties consistent with Z_2 topological insulator. The InAs/GaInSb bilayers offer a much sought-after building block for a single-mode platform of Majorana bound states and parafermions.

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