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**Undoped Si/SiGe Depletion-Mode Few-Electron Double Quantum Dots** MATTHEW BORSELLI, HRL Laboratories LLC, BIQIN HUANG, RICHARD ROSS, EDWARD CROKE, KEVIN HOLABIRD, THOMAS HAZARD, CHRISTOPHER WATSON, ANDREY KISELEV, PETER DEELMAN, IVAN ALVARADO-RODRIGUEZ, ADELE SCHMITZ, MARKO SOKOLICH, MARK GYURE, ANDREW HUNTER — We have successfully formed a double quantum dot in the sSi/SiGe material system without need for intentional dopants. In our design, a two-dimensional electron gas is formed in a strained silicon well by forward biasing a global gate. Lateral definition of quantum dots is established with reverse-biased gates with ∼40 nm critical dimensions. Low-temperature capacitance and Hall measurements confirm electrons are confined in the Si-well with mobilities $>10^4$ $cm^2$/V-s. Further characterization identifies practical gate bias limits for this design and will be compared to simulation. Several double dot devices have been brought into the few-electron Coulomb blockade regime as measured by through-dot transport. Honeycomb diagrams and nonlinear through-dot transport measurements are used to quantify dot capacitances and addition energies of several meV. Sponsored by United States Department of Defense. Approved for Public Release, Distribution Unlimited.

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