

Abstract Submitted
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Mixing with the radiofrequency single-electron transistor LOREN SWENSON, DANIEL SCHMIDT, SEQUOYAH ALDRIDGE, DAVID WOOD, ANDREW CLELAND, University of California at Santa Barbara — By configuring a radio-frequency single-electron transistor as a mixer, we have demonstrated good charge sensitivity and large bandwidth around a tunable center frequency. Our implementation greatly increases the spectral range achievable for sensitive broadband charge measurements with this device, limited only by the RC time of the transistor's center island. In the current demonstration operating at 300 mK, a 16 MHz resonance bandwidth has been shown to be tunable to 1.2 GHz with an unoptimized charge sensitivity of $5 \times 10^{-3} e/\text{Hz}^{1/2}$.

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