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Bias dependent shot noise measurement in STM style Au junction at room temperature RUOYU CHEN, PATRICK WHEELER, AMANDA WHALEY, DOUGLAS NATELSON, Rice University — Shot noise in nanoscale junctions is suppressed strongly near certain conductance values because of nearly fully transmitted modes. Using a gold tip in a STM style motion as the source, combining with high-frequency techniques, we simultaneously measured the conductance and the mean square current noise in nanoscale junctions at a series of voltage biases at room temperature. We have observed peaks in the conductance histogram and related shot noise suppression at different biases near integer multiples of the conductance quantum G0, especially the first three. It demonstrates that quantized electronic transport through quantum channels takes place. We will discuss the relevant noise processes and their evolution with bias across the junctions.

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