

Abstract Submitted
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Shot Noise Thermometry down to 10 mK LAFE SPIETZ, NIST, ROBERT SCHOELKOPF, Yale University — We report measurements of the Shot Noise Thermometer (SNT), a primary thermometer based on the electronic noise from a tunnel junction, in the range from 10 mK to 200 mK. We demonstrate operation of the SNT down to 10 mK with 10% accuracy at the lowest measured temperature. At 10 mK, where for a measurement frequency of $f=450$ MHz, $hf = 2.5k_B T$, we demonstrate that, provided that quantum corrections are taken into account, the SNT continues to be a practical thermometer. We also show that self-heating is not a measurable problem and demonstrate a simplified readout of the SNT.

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