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# Quantum clock precision studied with a superconducting circuit

We theoretically and experimentally study the precision of a quantum clock near zero temperature, explicitly accounting for the effect of continuous measurement. We theoretically find the precision of the clock in each regime, which reveals that in the coherent regime reveals that the precision can in principle, be arbitrarily large in spite of the presence of measurement backaction. We also derive and experimentally verify an explicit link between the (kinetic) thermodynamic behavior of the clock and its precision, thus achieving the first experimental test of a kinetic uncertainty relation in the quantum domain.

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