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Microwave-Induced Cooling of a Superconducting Persistent-Current Qubit SERGIO VALENZUELA, MIT, WILLIAM OLIVER, MIT Lincoln Laboratory, DAVID BERNS, KARL BERGGREN, LEONID LEVITOV, TERRY ORLANDO, — We present the experimental demonstration of microwave-induced cooling of a persistent-current qubit. Our qubit is a multi-level artificial atom. Thermal population of the first-excited qubit state is driven to a higher-excited state, from which it preferentially relaxes to the qubit ground state. Cooling is realized, because the driving-induced population transfer to the ground state is faster than the thermal repopulation of the excited state. We achieve effective qubit temperatures ¡ 3 mK, a factor 10x-100x lower than the dilution refrigerator ambient temperature. This talk will present and discuss these experimental results. [1] S.O. Valenzuela, W.D. Oliver, D.M. Berns, et al., Science (2006).

[X] Prefer Oral Session
[ ] Prefer Poster Session

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