Abstract Submitted
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Coherent THz radiatin and its manipulation in intrinsic Josephson junctions of $Bi_2Sr_2CaCu_2O_{8+\delta}$[1] KAZUO KADOWAKI, M. TSUJIMOTO, T. KOIKE, N. ORITA, K. DEGUCHI, K. YAMAKI, T. YAMAMOTO, KRSTO IVANOVIC, T. KASHIWAGI, H. MINAMI, M. TACHIKI, Graduate School of Pure and Applied Sciences, University of Tsukuba, S. FUKUYA[2], R.A. KLEMM, Department of Physics, University of Central Florida — We have recently succeeded in generating THz emission from mesas fabricated in high T_c superconductor single crystalline $Bi_2Sr_2CaCu_2O_{8+\delta}$ intrinsic Josephson junction systems. The emission frequency can be controlled by the geometrical cavity conditions, and ranges from about 200 GHz to about 1 THz as a fundamental frequency with up to the 3rd harmonics corresponding to 3 THz, depending on the cavity resonance conditions, as long as the *ac*- Josephson condition is fulfilled. The intensity is estimated to be $\sim$10 μW, but in some cases it reaches even upto 50 μW. Furthermore, the radiation is coherent and continuous with high stability. All these features are extremely beneficial for quantum mechanical namipulation of qubits. We demonstrate experimentally the tunability of the emission generated from two mesas showing resonance merging behavior as an example.

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