

Abstract Submitted  
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**The relationship between oscillation modes and single crystalline Bi2212 mesa structures**<sup>1</sup> T. KASHIWAGI, K. DEGUCHI, M. TSUJIMOTO, N. ORITA, T. KOIKE, R. NAKAYAMA, K. DELFANAZARI, H. MINAMI, T. YAMAMOTO, K. KADOWAKI, University of Tsukuba, CREST-JST, WPI-MANA — Continuous electromagnetic (EM) radiation in terahertz region has been observed from a rectangular mesa structure of  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$  (Bi2212) single crystals.<sup>2</sup> It has been established that the radiation frequency is determined by both ac Josephson effect and geometrical cavity resonance condition.<sup>3</sup> The observed radiation frequencies in the many rectangular mesas studied were inversely proportional to the width of the mesa and the fundamental modes equal to twice the mesa width. Recently, several mesas show different radiation characteristics which suggest the existence of the higher excitation modes such as one wave length excitation mode. The observed frequencies from above mesas are almost explained by the geometrical cavity model. In order to clarify the detail of the excitation modes, we also measured the radiation pattern of EM waves.

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<sup>2</sup>L. Ozyuzer *et al.*, Science **318** (2007) 1291.

<sup>3</sup>K. Kadowaki *et al.*, J. Phys. Soc. Jpn. **79** (2010) 023703

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