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Effect of magnetic field on the coherent THz emission from mesas of single crystal $Bi_2Sr_2CaCu_2O_{8+\delta}$ TAKEO KITAMURA, TAKANARI KASHIWAGI, MANABU TSUJIMOTO, KAVEH DELFANAZARI, RYO NAKAYAMA, MASASHI SAWAMURA, TAKASHI YAMAMOTO, HIDEHIRO ASAI, HIDETOSHI MINAMI, MASASHI TACHIKI, KAZUO KADOWAKI, University of Tsukuba — Coherent and continuous electromagnetic (EM) waves radiation phenomena with a mesa structure of $Bi_2Sr_2CaCu_2O_{8+\delta}$ single crystal have been investigated precisely in magnetic field up to only 200 Oe where the emission intensity decreases sharply expectedly for the field H parallel to the c-axis. The emission could not be observed above 20 Oe for $H//c$-axis whereas it persisted up to 160 Oe for $H//ab$ plane [1]. These results indicate that both pancake vortices as well as Josephson vortices suppress the THz emission very strongly. On the other hand, the Josephson plasma resonance phenomena have been observed in both $H//ab$ and $H//c$ even in very high fields ($\sim$Tesla). The emission processes are considered to be the reverse processes of the absorption. It is interesting to pose a question what happens in high fields in the EM waves emission. We show interesting experimental results of THz emission in high magnetic fields including low field region and will argue the mechanism of emission in high magnetic fields.

[1] K. Yamaki *et al.*, physica C **470** (2010) S804-805.

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