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Cavity mode waves during terahertz radiation from rectangular $Bi_2Sr_2CaCu_2O_{8+\delta}$ mesas RICHARD KLEMM, ERICA LABERGE, DUSTIN MORLEY, University of Central Florida, TAKANARI KASHIWAGI, MANABU TSUJIMOTO, KAZUO KADOWAKI, University of Tsukuba, Tsukuba, Japan — We re-examined the angular dependence of the radiation from the intrinsic Josephson junctions in rectangular mesas of $Bi_2Sr_2CaCu_2O_{8+\delta}$, in order to determine if the cavity mode part of the radiation arises from waves across the width w or along the length ℓ of the mesas, associated with "hot spots" [Wang *et al.*, Phys. Rev. Lett. **105**, 057002 (2010)]. Fits to the data of Kadowaki *et al.* [J. Phys. Soc. Jpn. **79**, 02373 (2010)] using both a uniform *ac* Josephson current source and a non-uniform cavity mode (or magnetic surface current) source suggest that both scenarios are equally probable. However, when $n\ell/2w$ is integral, where n is the index of the rectangular $TM^z(n,0)$ mode, standing cavity wave modes along the length of the mesa do not radiate in the xz plane perpendicular to the length of the mesa, suggesting experiments on such mesas could help to resolve the question.

Richard Klemm
University of Central Florida

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