

453. Title:Numerical study for electromagnetic wave emission in thin samples of intrinsic Josephson junctions

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Abstract:Emission of THz electromagnetic waves from thin samples of intrinsic Josephson junctions (IJJ's) is numerically studied, using the xz-model. We show that the spatial symmetry of the electromagnetic excitations corresponding to the  $\pi$ -cavity mode is different from that of the  $2\pi$ -cavity mode in the IJJ's where the junction parameters such as the Josephson critical current are weakly inhomogeneous. In such IJJ's the emission in the  $[0 0 1]$  direction, which is forbidden in the dipole emission, appears at the  $\pi$ -cavity mode resonance, whereas it is not observed in the  $2\pi$ -cavity mode resonance. It is also shown that the strong emission occurs when the transition between branches in the I-V characteristics takes place.