

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Angular dependence of the radiation power of a Josephson STAR-emitter¹ RICHARD KLEMM, University of Central Florida, KAZUO KADOWAKI, University of Tsukuba — We calculate the angular dependence of the power of stimulated terahertz amplified radiation (STAR) emitted from a *dc* voltage applied across a stack of intrinsic Josephson junctions. During coherent emission, we assume a spatially uniform *ac* Josephson current density in the stack acts as a surface electric current density antenna source, and the cavity features of the stack are contained in a magnetic surface current density source. A superconducting substrate acts as a perfect magnetic conductor with $H_{\parallel,ac} = 0$ on its surface. The combined results agree very well with recent experimental observations. Existing $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ crystals atop perfect electric conductors could have Josephson STAR-emitter power in excess of 5 mW, acceptable for many device applications.

¹supported by JST, CREST, MANA, CTC, and MEXT.

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Date submitted: 19 Nov 2008

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