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Powerful coherent terahertz emission from $Bi_2Sr_2CaCu_2O_{8+\delta}$ mesa array[1] TIMOTHY BENSEMAN, KEN GRAY, ALEXEI KOSHELEV, WAI-KWONG KWOK, ULRICH WELP, Materials Science Division, Argonne National Laboratory, HIDETOSHI MINAMI, KAZUO KADOWAKI, Institute for Materials Science, University of Tsukuba, Japan, TAKASHI YAMAMOTO, Quantum Beam Science Directorate, Japan Atomic Energy Agency — Stacks of intrinsic Josephson junctions (IJJs) in high-temperature superconductors enable the fabrication of compact sources of coherent THz-radiation. Here we demonstrate 150 microwatts of radiation power at 0.51 THz, using three synchronized stacks patterned on a single $Bi_2Sr_2CaCu_2O_{8+\delta}$ crystal. The emitted power scales roughly as the square of the number of energized stacks, while the total power spectrum is monochromatic to within observational limits. These results imply that the stacks radiate coherently.

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Timothy Benseman
Materials Science Division, Argonne National Laboratory

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