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Microwave Resonant Activation Results in Hybrid MgB2/I/Pb and MgB2/I/Sn Josephson Junctions with Low to Moderate Damping STEVEN CARABELLO, JOSEPH LAMBERT, Drexel University, WENQING DAI, QI LI, Penn State University, KE CHEN, DANIEL CUNNANE, X.X. XI, Temple University, ROBERTO RAMOS, Indiana Wesleyan University
— Superconducting-to-normal switching in "hybrid' single-gap/2-gap junctions is a subject of recent theoretical study. Most analysis is in the absence of thermal or microwave fluctuations. We have performed experiments on such hybrid junctions, incorporating microwave excitations, on multiple MgB_2/I/Sn and MgB_2/I/Pb junctions with small to moderate damping. At small damping, the primary and resonant peaks in the histogram of superconducting to normal switching events are easily distinguishable, when the appropriate microwave power is applied. At moderate damping, the resonant behavior is still apparent, although separate primary and resonant peaks do not appear together in the same switching histogram, at any power. In both cases, additional features appear beyond those in single-gap/single-gap junctions, which may reflect the presence of additional resonant and tunneling modes.

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