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Heating Effects in Interlayer Tunneling Spectroscopy of $\text{Bi}_{2.1}\text{Sr}_{1.4}\text{Ca}_{1.5}\text{Cu}_2\text{O}_{8+\delta}$ as Inferred from Single Junction Methods C. KURTER, Argonne National Lab., J.F. ZASADZINSKI, Illinois Institute of Technology, L. OZYUZER, Izmir Institute of Technology, D.G. HINKS, K.E. GRAY, Argonne National Laboratory, EMERGING MATERIALS GROUP TEAM, ILLINOIS INST. OF TECH. COLLABORATION, IZMIR INST. OF TECH. COLLABORATION — In order to study Joule-heating effects on small intrinsic Josephson junction (IJJ) stacks or mesas, we compare their current-voltage curves, $I(V)$, with those of single junctions, both using $\text{Bi}_{2.1}\text{Sr}_{1.4}\text{Ca}_{1.5}\text{Cu}_2\text{O}_{8+\delta}$ (Ca-Bi2212) intercalated by HgBr_2 . Even for small volume stacks with reduced dissipation by intercalation, there can be self-heating despite the absence of the commonly seen backbending of $I(V)$. This conclusion is based on distinctive features of $I(V)$ of intermediate size mesas which were absent in single junctions.

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