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**Intrinsic Josephson effect in  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$  after doping by current injection** S. PROBST, X.Y. JIN, Y. SIMSEK, C. STEINER, C. BERGMANN, Y. KOVAL, P. MÜLLER, Department of Physics and Interdisciplinary Center for Molecular Materials (ICMM), Universität Erlangen-Nürnberg — By current injection we can change the properties of  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$  single crystals electronically in a wide range. In this work the properties of the same sample were changed multiple times in very small steps in order to investigate the doping process by current injection in greater detail. By measuring the IV characteristic of the intrinsic Josephson junctions as well as doping current and doping voltage simultaneously, the change of superconducting properties is monitored. Macroscopic quantum tunneling experiments in intrinsic Josephson junctions were performed. An exponential increase of the critical current density with hole concentration was observed. Simultaneously, the capacitance of the intrinsic Josephson junctions increases with the doping level by a factor of 5. We will discuss possible reasons for these results.

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