Josephson effects of High-Tc YBCO variable-thickness bridges

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The high-Tc Josephson junctions were successfully fabricated by using the variable-thickness bridges (VTB) technique, which controls the thickness of the link region to several nanometers. The VTB of YBCO thin film were fabricated by standard Ar ion beam and Focused ion beam mill. The properties of variable-thickness bridges were investigated. A set of voltage-current curves measures in a junction after irradiation with microwaves at f =5.97 GHz and various powers from 0 to 15 dBm was obtained. The voltage-current is in good agreement with resistivity-shunted-junction (RSJ) model. These bridges of YBCO with VTB have well agreed d.c. and a.c. Josephson effects and have revealed the superconductor-normal-superconductor weal link character.