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Resonant tunneling in $Y(Dy)Ba_2Cu_3O_{7-\delta}/PrBa_2Cu_{3-x}Ga_xO_{7-\delta}/Y(Dy)Ba_2Cu_3O_{7-\delta}$ ramp-type Josephson junctions

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Abstract

We have investigated both experimentally and theoretically the normal state resistance and Josephson critical current of ramp-type Josephson junctions having YBCO (DyBCO) electrodes and 8–30 nm thick Ga-doped barriers $PrBa_2Cu_{3-x}Ga_xO_{7-\delta}$ with Ga content x = 0, 0.05 and 0.1. Analysis of the data shows that the behavior of the junctions can be well described by the model assuming transport through a finite number of localized states in the barrier.