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YBCO Coated Conductors: Few Degree Grain Boundary Transport

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The [00 I]-tilt boundaries that dominate YBCO Coated conductors can be characterized by periodic dislocations separated by strongly-linked superconducting material. This occurs when the misorientation of the grain boundary is only a couple of degrees. We find that with a typical transport current measurement, a 2 degree single grain boundary is indistinguishable from the surrounding grains. We will reconcile this with data from a 4.5 degree single grain boundary that shows clear, weakly-linked dissipation described by non-Ohmic, linear differential behavior. The well-textured coated conductors exhibit grain-like V-I characteristics in addition to strong field dependence

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