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Uniaxial Strain Induced Critical Current Degradation of Ag-Sheathed Bi-2212 Round Wire

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The uniaxial strain induced the critical current degradation of Bi-2212 Ag-sheathed round wire was studied at 4.2 K in 14 T background field. The strains applied on the sample are both tension and compression. An additional tensile strain caused by the difference of thermal expansion between Bi-2212 round wire and Ti-6Al-4V was calculated. Results show that a drastic degradation of the critical current occurred when the strain exceeded 0.35% on tension side. And on compression side, the degradation of critical current was almost linear but more gradual than tensile strain. It is foreseen that these results can provide a basis for Bi-2212 conductor and superconducting coil design.

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