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Wed-Af-Po3.19-07 [52]: Study on Mechanical Properties of Quasi-identical Superconductor Strands Stacked by 2mm Wide REBCO Tapes

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Abstract—Due to its excellent performance in critical current, REBCO high-temperature superconductor has important applications in superconducting strands, superconducting cables, superconducting magnets, and superconducting transformers. However,high-temperature tapes are subject to unpredictable mechanical stresses in various applications, and excessive stress will cause permanent damage to the tapes. The critical bending radius, the critical tensile stress, and the critical twist angle and n value of 2mm wide REBCO high-temperature tape were studied numerically and experimentally in this paper. At the same time, the bending, stretching and twisting characteristics of quasi-identical high-temperature superconducting strands stacked by 2mm wide RECBO tapes were further studied. The conclusions obtained can provide important data support for the practical application of superconducting tape.
Index Terms—High-temperature superconducting tape, high-temperature superconducting strand, bending characteristics, tensile properties, twisting characteristics, critical current

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