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Bending and Twisting Properties of Quasi-isotropic Superconducting Strand at Liquid Helium Temperatures Based on Laminate Theory

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With the development of REBCO high-temperature superconductor (HTS), many structures of superconducting strand/conductor stacked with REBCO tapes were proposed in past years. The Quasi-isotropic superconducting strand made by stacked REBCO tapes and copper tapes was proved to have excellent performance in critical current at liquid nitrogen temperatures. In this paper, the critical current of QI-S strand is simulated based on H-formulation at 4.2 K and 77 K. And the bending and twisting properties of QI-S strand are studied based on laminate theory at 4.2 K. The results indicate that QI-S strand has better performance in application fields at low temperatures such as power transmission, large superconducting magnets and fusion industry.

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