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# Wed-Af-Po3.19-01 [47]: The impact of stacked angle on the uniformity of trapped field in HTS taped stacks

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Uniform magnetic field was mainly produced by electromagnetic coils in most engineering applications. However, with the development of superconducting technology, the demand for bulk magnets with uniform magnetic field has increased accordingly. In this paper, the key factors affecting the magnetic field uniformity of bulk magnets have been studied experimentally by magnetizing HTS taped stacks with different stacking angles under liquid nitrogen temperature zone. A trapped field with higher uniformity in the taped stack has been obtained by optimizing the stacking angle of HTS tapes. By using E-J power law joint with T-A formulation to establish a two-dimensional axisymmetric simulation model in a commercial software, the distribution of trapped magnetic field lines in the angled tape stack has been achieved and the induced current density in the taped stacks has been analyzed as well. Results show that the strong nonlinearity of the induced current distribution in the HTS tapes is the main factor affecting the uniformity of the trapped field. The magnetization angle does not affect the uniformity of the trapped field, but it is the important factor that affects the strength of the trapped field.

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