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Thu-Af-Po.05-07: Dynamic resistance characteristics of multi-filamentary HTS tapes under perpendicular alternating magnetic fields

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The development of multi-filamentary high-temperature superconducting (HTS) tape represents a significant research direction for the advancement of future applications, largely due to its lower AC loss. The AC loss characteristics of the multi-filamentary structure have been the subject of extensive experimental and finite element simulation studies. Nevertheless, there remains a research gap in the dynamic resistance effect and flux flow effect of multi-filamentary HTS tapes carrying DC current under perpendicular alternating magnetic fields. This paper presents the influence of different transporting currents and magnetic field with different amplitudes and frequencies on the dynamic resistance of multi-filamentary HTS tape. The results will help researchers to gain a deeper understanding of the dynamic resistance mechanism of multi-filamentary HTS tapes, which will provide new ideas for the design of flux pumps and persistent current switches.

Author: FENG, Bin (university of bristol)

Co-authors: MA, Jun (University of Bristol); ZHANG, Zhixuan (University of Bristol); ZHU, Hanlin (University of Bristol)

Presenter: FENG, Bin (university of bristol)

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