

AC Loss and Voltage Signal in a Pancake Coil Made of Coated Conductor with Ferromagnetic Substrate

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Abstract - The voltage signal and the ac loss in a pancake coil made of a coated conductor tape with magnetic substrate is measured. The experimental data have been analysed with the help of numerical calculations. It is found that while for a single tape the ac loss is dominated by the substrate, for the coil it is dominated by the superconducting layer. Moreover, the substrate increases the ac loss generated in the superconducting material, making it similar to a slab. A compensation method for the voltage signal is also described, thanks to which the contribution from the substrate and the superconducting layer can be distinguished.

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