Electromagnetic Behavior of High-T_c Superconductors on the Superconducting State and under the Quench

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The electromagnetic behaviour of high-Tc superconductors with cryostat filled with liquid nitrogen is described using a circuit model. Ingredient models are the voltage current characteristics of the superconducting thin films used to make the superconducting state and quench propagation. Current wave shape and voltage wave shape are simulated numerically as a function of applied A.C. Losses are computed simply by multiplying voltage and current. Also Electric field distribution and electric potentials are described with contour plot and current distribution and redestribution in and on surface of superonductor are simulated on the superconducting state and under the quench. We think that this modeling will be useful in the optimum designing a superconducting fault current limiters and superconducting power cables.

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