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AC LOSS IN SUPERCONDUCTIVE CABLE: COMPARISON OF YBCO THIN FILMS AND COMPOSITE BSCCO/Ag TAPES,

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YBCO films grown on both $SrTiO_3$ single crystal and rolling assisted biaxially textured (Ni) substrates (RABiTS) carry high critical current densities. New multi-filamentary BSCCO tapes also have quite high critical currents in the absence of applied magnetic fields. In each case ac current flow causes power loss [W. T. Norris, J. Phys. D 3 489 (1970)]. In the low-current regime, loss in a film strip much larger than that calculated by Norris is associated with the peak current density at the film edge arising from the barrier to vortex entry [H. R. Kerchner et al. Phys. Rev. B 60, 6878 (1999)]. The degree to which the observed power loss for multi-filamentary BSCCO tapes agrees with the calculated results depends primarily upon the quality of filament-to-filament coupling. The possible role of a barrier to vortex entry into a BSCCO filament will be discussed.

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