Abstracts

Theory for a Cylindrical Pillbox Accelerator Cavity Using Layered Structures for Reducing Skin-Effect Losses (Short Papers)

W.C. Sailor, F.M. Mueller and B.E. Carlsten. "Theory for a Cylindrical Pillbox Accelerator Cavity Using Layered Structures for Reducing Skin-Effect Losses (Short Papers)." 1993 Transactions on Microwave Theory and Techniques 41.7 (Aug. 1993 [T-MTT]): 1471-1474.

It is shown that for a cylindrical pillbox accelerator cavity operating in a TM/sub 0n0/ mode, the use of laminated conductors for the flat walls in conjunction with a multilayered dielectric structure for the round walls can decrease skin-effect losses by an order of magnitude over that of a copper cavity having the same accelerating field. The layered dielectric structure for the round walls works in a fashion similar to a quarter-wave interferometer. The laminated conductor on the flat walls reduces the ohmic losses by effectively increasing the skin depth.

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