Abstracts

Performance of Ultra-Bandwidth YIG Pulse Compression Networks (Correspondence)

W.L. Bongianni, J. Burnsweig and J.H. Polson. "Performance of Ultra-Bandwidth YIG Pulse Compression Networks (Correspondence)." 1968 Transactions on Microwave Theory and Techniques 16.12 (Dec. 1968 [T-MTT]): 1061-1064.

The magnetoelastic mode in axially magnetized rods of YIG, as originally described by Strauss, has been shown to operate as a wide bandwidth dispersive delay device capable of pulse compression. A necessary feature of such a device is that the signal level of the RF feedthrough be below the sidelobes of the recompressed pulse. To isolate the RF input from the output, it is necessary to operate the line in a two-port configuration. The problem with this configuration is that a conflicting polarization requirement enters when the ports are at opposite ends of the rod, and this usually means unacceptably high insertion losses. Other workers have successfully attacked this problem, but the solution usually requires the addition of a separate component which tends to complicate the final design. The solution presented here is to achieve elliptical polarization through the use of reflections at the rod faces. This has meant that only the orientation of the face with respect to the axis or the orientation of the axis with respect to the magnetic field has been modified.

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