

Analysis of the suspended strip in elliptical cross section by separation of variables

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The coaxial suspended strip configuration in elliptical cross section is often found in transitions from ordinary coax to planar circuits and other geometries. Using elliptical coordinates makes the problem separable, leading to closed-form solutions for the fundamental TEM mode and the TE/TM higher modes. It is emphasized that the presence of the thin strip is dealt with analytically by this approach. Mode patterns and TEM characteristic impedance are reported. The cutoff frequencies versus eccentricity are computed for the first eight modes.

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