Abstracts

The nature of the spectral gap for leaky waves on a periodic strip grating structure

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The nature of the spectral gap at forward endfire for a periodic leaky-wave structure consisting of an infinite array of metallic strips on a lossless grounded dielectric layer is studied and compared with that for a simple grounded dielectric layer. One basic difference is that the nature of the spectral gap depends on whether or not a second space harmonic (n=-2) begins radiating before the main radiating harmonic (n=-1) is scanned to forward endfire. The spectral gap resembles that for a lossy dielectric layer when a second space harmonic is radiating, and resembles that for a lossless dielectric layer otherwise. In addition, an interesting new solution, which has no counterpart in the dielectric layer case, is found to exist when the n=-2 harmonic is nonradiating in the scan range of the n=-1 harmonic.

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