Subwavelength microwave guiding by periodically corrugated strip line

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Abstract

A new type of microwave transmission line structure is proposed in order to reduce the crosstalk between transmission line circuits. In this structure, the edge of the metal strip line is periodically corrugated with subwavelength grooves of appropriate geometric parameters, and thus the transmission lines can support highly localized spoof surface plasmon polaritons (SPPs) at microwave frequencies. The theoretical simulation shows that the crosstalk between such a transmission line and a conventional strip line is very low at microwave frequencies, and this is further verified experimentally. This type of transmission line structures has great potential applications in high speed circuit systems.

Keyword：Subwavelength, Surface plasmon, crosstalk, strip line