Abstracts

A photonic crystal joint (PCJ) for metal waveguides

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A novel method to eliminate currents in joints or interfaces in enclosed metal microwave structures is presented. By introducing a two-dimensional photonic crystal structure in the joint the conductor losses can be reduced to near that of a jointless structure. Experimental measurements at X-band of waveguide conductor loss using various joint geometries are presented, showing a drastic reduction in loss using the photonic crystal joint (PCJ). Various applications of the PCJ will be discussed, including H-plane waveguide joints, waveguide flanges and resonant cavities.

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