Gap Waveguide Technology using Periodic Structures with Higher Symmetries

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Abstract

Gap waveguide technology was first proposed ten years ago. Most of the existing designs are based on the use of the bed of nails as periodic structure to create the required parallel plate stop band. In this work, the use of holes instead of pins for the implementation of the groove version is presented. The periodic structure based on the use of holes requires the glide symmetrical disposition of the unit cell to provide a complete and wide stopband for the parallel plate modes. Design guidelines for this version will be detailed and the advantages in terms of manufacturing will be discussed together with the limitations when compared to the use of pins. Some examples of designed antennas and components in the millimeter wave band using this approach will be presented in the talk.