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标题: Analysis of artificial dielectric lens with metallic rectangular chips for terahertz wave band and physical explanation by periodic model
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摘要: Optical devices for the terahertz wave band are being developed now and require better designs. This paper analyzes an artificial dielectric lens with metallic rectangular chips for the terahertz wave band. This paper also provides an explanation of the phenomena by use of a periodic model. The periodic analysis model, extracted from the full one by assuming periodicity, confirms the phase delay as the mechanism that produces the focusing effect. Furthermore, the results of the full model confirm that the focusing length is longer with the larger periodicity of rectangular metal chips along the direction transverse to the propagation direction. It also indicates a nonuniform change for the periodicity along the propagation direction and the longer focusing length with narrower rectangular chips. The results of the full model analysis are qualitatively consistent with those of the periodic model one. This implies that the design for an exact size lens is possible through use of the periodic model.
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