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研究简报

基于Floquet模式的异向介质参数提取方法

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Electromagnetic Parameter Retrieval Method Based on Floqeut Mode Analysis

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摘要 基于TEM波作用下SRR(开口谐振环)异向介质的解析分析，确立了3种摆向下SRR结构的负参数谐振响应。将Smith的异向介质参数提取方法推广至Floquet模式下，并比较了两种方法的S参数。逐一分析了不同摆向下异向介质的负效应，证明了解析分析的正确性。与传统方法相比，基于Floquet模式的参数提取有效地减少了S参数的计算时间，更有利于分析异向介质的双各向异性。

关键词： 异向介质 参数提取 Floquet模 谐振

Abstract： A rigorous analysis of Split Rring Resonator (SRR) metamaterials is presented for three different electromagnetic field polarization and propagation directions to establish the SRR resonance behaviors. The Smith's parameter retrieval method is then extended to Floquet mode analysis, and the S parameters from the two methods are compared. The resonances of SRR with different orientation is investigated to testify the proposed analysis. Compared with traditional methods, parameter retrieval method based on Floquet mode analysis reduces greatly the time to calculate the S parameters, thus it is more convenient for the analysis of metamaterial bianisotopic effects.

Keywords： Metamaterials Paremeter retrieval Floquet model Resonance

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