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标题: Configurable metamaterial absorber with pseudo wideband spectrum

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摘要: Metamaterials attain their behavior due to resonant interactions among their subwavelength components and thus show specific designer features only in a very narrow frequency band. There is no simple way to dynamically increase the operating bandwidth of a narrowband metamaterial, but it may be possible to change its central frequency, shifting the spectral response to a new frequency range. In this paper, we propose and experimentally demonstrate a metamaterial absorber that can shift its central operating frequency by using mechanical means. The shift is achieved by varying the gap between the metamaterial and an auxiliary dielectric slab parallel to its surface. We also show that it is possible to create multiple absorption peaks by adjusting the size and/or shape of the dielectric slab, and to shift them by moving the slab relative to the metamaterial. Specifically, using numerical simulations we design a microwave metamaterial absorber and experimentally demonstrate that its central frequency can be set anywhere in a 1.6 GHz frequency range. The proposed configuration is simple and easy to make, and may be readily extended to THz frequencies. (C) 2012 Optical Society of America

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