401. Title:Manipulating the plasmon-induced transparency in terahertz metamaterials
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Abstract:Coupling between superradiant and subradiant mode resonators in a metamaterial unit cell plays an important role in observing the sharp transparency peak due to destructive interference between the resonators. This effect is enhanced as the resonators are brought closer to each other in a conventional planar arrangement. We present a novel coupling scheme of planar terahertz metamaterial to tune the plasmon-induced transparency peak by physically varying the distance between the superradiant and the subradiant resonators in such a way that the transparency peak begins to disappear as the coupled resonators are brought closer than a critical separation distance. The effect is attributed to the disappearance of the resonant behavior of the subradiant resonator in a closely coupled regime. The simple planar design presented here demonstrates a scheme to manipulate the electromagnetically induced transparency-like behavior in terahertz metamaterials and this could lead to the development of unique slow light devices for terahertz applications.