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Title
Broadly tunable quasi-phase-matching in nonlinear metamaterials
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Abstract
The ability to tune the quasi-phase-matching (QPM) frequency is a highly desirable though lacking feature of many nonlinear devices. To this end, we consider QPM in a special class of active nonlinear metamaterials (MMs), whose properties can be controlled postfabrication. By application of a tunable, periodic perturbation in the linear susceptibility (magnetic or electric) of a MM, a single nonlinear device can be constructed to operate over an exceedingly broad bandwidth. We propose a nonlinear MM for QPM second-order harmonic generation at terahertz frequencies, predicted to have a tunable bandwidth of over 100%. (20 References).