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摘要: A type of negative-index metamaterial composed of periodic arrays of SRRs is proposed and numerically investigated in the visible frequencies. Employing the high order magnetic resonance to induce negative permeability, negative refractive index is obtained between 395 THz and 430 THz with the maximum FOM = 4.59. The effective permeability exhibits a rapid convergence with increasing number of metamaterial layers. Different responses from the electric and magnetic resonances to the changing geometric parameters are compared and analyzed in terms of the field distribution. Simulation results show that the high order magnetic resonance can be greatly enhanced at visible frequencies as well as effectively tuned over a wide spectral range without notably altering the coupling between unit cells. (C) 2012 Optical Society of America

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