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Title:Excitation of a high-Q subradiant resonance mode in mirrored single-gap asymmetric split ring resonator terahertz metamaterials

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Abstract:We propose a mirrored arrangement of asymmetric single split ring resonators (ASRs) that dramatically enhances the quality factor of the inductive-capacitive resonance. In a regular non-mirrored arrangement, the surface current modes are all oriented in phase. Hence, light scattered by individual ASRs interferes constructively. In contrast, the proposed configuration sustains surface currents that are oppositely oriented for neighboring ASRs, in turn leading to the cancellation of the net dipole moment accompanied by destructive interference of the scattered fields. The proposed arrangement holds promise to suppress radiation losses in terahertz, microwave and infrared plasmonic metamaterials. © 2012 American Institute of Physics.

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