Research data for

Coherent selection of invisible high-order electromagnetic excitations

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The manuscript contains all information required to reproduce the simulation results that it contains. Here, the numerical simulation results are given by txt or xlsx files.

Figure2c.txt, Figure2d.txt 2(c) The electric field intensity in the middle plane of a Au layer. 2(d) The corresponding magnetic field intensity of fishnet metamaterial on the center plane of fishnet metamaterial. The modes are extracted for wavelengths λ = 850 nm. The x-coordinate increases with increasing column (left to right in the corresponding figures) and the y-coordinate increases with increasing row (bottom to top in the corresponding figures).

Figure3b.txt, Figure3c.txt, Figure3d.txt The magnetic field intensity in the middle plane of the metamaterial under the three different excitation conditions. The excitation wavelength is 820 nm for all three cases. 3(b) at B-antinode. 3(c) at Travelling wave. 3(d) at E-antinode. The x-coordinate increases with increasing column (left to right in the corresponding figures) and the y-coordinate increases with increasing row (bottom to top in the corresponding figures).

Figure4a.txt, Figure4b.txt, Figure4c.txt 4a-4c: The three-dimensional charge distribution of fishnet metamaterial at (b) at E-antinode, λ = 850 nm, (b) at B-antinode, λ = 1500 nm, (b) at B-antinode, λ = 820 nm. The z-coordinate indicates the strength of the charge.

Figure4d.txt, Figure4e.txt, Figure4f.txt The magnetic field intensity in the middle plane of the metamaterial under the three different excitation conditions. (d) at E-antinode, λ = 850 nm, (e) at B-antinode, λ = 1500 nm, (f) at B-antinode, λ = 820 nm. The x-coordinate increases with increasing column (left to right in the corresponding figures) and the y-coordinate increases with increasing row (bottom to top in the corresponding figures). The z-coordinate

indicates the strength of the magnetic field.

Figure6b.txt, Figure6c.txt, Figure6d.txt The three-dimensional charge distribution of fishnet metamaterial at (b) at E-antinode, λ = 850 nm, (b) at B-antinode, λ = 1500 nm, (b) at B-antinode, λ = 820 nm.

Figure6d.txt, Figure6e.txt, Figure6f.txt The magnetic field intensity in the middle plane of the metamaterial under the three different excitation conditions. (d) at E-antinode, λ = 1310 nm, (e) at B-antinode, λ = 2310 nm, (f) at B-antinode, λ = 1172 nm. The x-coordinate increases with increasing column (left to right in the corresponding figures) and the y-coordinate increases with increasing row (bottom to top in the corresponding figures).

Figure8c.txt The magnetic field intensity in the metamaterial at E-antinode, λ = 1270 nm.

Figure8c_insert.txt The magnetic field intensity at the center of metamaterial. The x-coordinate increases with increasing column (left to right in the corresponding figures) and the y-coordinate increases with increasing row (bottom to top in the corresponding figures. The z-coordinate indicates the strength of the magnetic field.

FigureS1b.txt Distribution of the magnetic field polarized along the x axis for the sample with s =155 nm. The x-coordinate increases with increasing column (left to right in the corresponding figures) and the y-coordinate increases with increasing row (bottom to top in the corresponding figures).

FigureS1c.txt Distribution of the magnetic field polarized along the y axis for the sample with s =155 nm. The x-coordinate increases with increasing column (left to right in the corresponding figures) and the y-coordinate increases with increasing row (bottom to top in the corresponding figures).

spectra.xlsx: This file includes all the spectra data shown in this paper. 2b: Reflection R, transmission T, and absorption A spectra of the sample under traveling wave excitation. The first column is corresponded to the wavelength of incident light. 3a: Absorption spectrum of the sample under traveling-wave excitation, together with the two coherent absorption spectra with the sample at the E-antinode and the B-antinode of a standing wave. 5b: Traveling-wave

spectra of the sample. Reflection R, transmission T, and absorption A spectra of the sample under traveling wave excitation. The first column is corresponded to the wavelength of incident light. 6a: Absorption spectra of the sample under three different excitation conditions. 7b: Reflection R, transmission T, and absorption A spectra of the sample under traveling wave excitation. The first column is corresponded to the wavelength of incident light. 7c: The contribution of different multipoles in radiation, including the electric dipole (E-Dip), magnetic dipole (M-Dip), toroidal dipole (T- Dip), electric quadrupole (E-Quad), magnetic quadrupole (M-Quad), toroidal quadrupole (T- Quad), electric octupole (E-Oct), and magnetic octupole (M-Oct). 8a: The E-antinode absorption of the toroidal metamaterial sample. 8b: At E-antinode, the contribution of different multipoles in radiation. S1a: B-antinode absorption spectra of four samples with different degrees of structural asymmetry.