

Abstract Submitted  
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**Switching the Electric  
and Magnetic Responses in a Metamaterial<sup>1</sup>**

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The electric and magnetic responses of a system are usually characterized by permittivity and permeability, which depend not only on the intrinsic structure of the material, but also on the polarization of incident light. Yet studies so far concentrate most on finding new geometries to achieve desired electric and magnetic responses, and very few reserches have been done on the role of external excitation fields. We demonstrate in this presentation that in an assembly of stacked metallic U-shaped resonators, pure magnetic and electric responses are realized respectively, and the magnetic and electric responses can be switched at the same frequency by changing the polarization of incident light for 90 degrees. This unique feature originates from the topological symmetry of the structure. We suggest that this property opens a new gateway to construct metamaterial with tunable permittivity and permeability.

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