

Abstract Submitted  
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**Generating Steep Phase Anisotropy With Zero-Backscattering  
By Arrays of Coupled High Permittivity Dielectric Nanoresonators** FENG  
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tute, Kent State University, HAN HTOON, CINT, Los Alamos National Lab —  
Simultaneous excitation of electric and magnetic dipolar modes in high-permittivity  
dielectric nano-resonators can lead to zero-backscattering, i.e. full transmission.  
Here, we numerically demonstrate that stable or unstable zero-backscattering by  
2-dimensional (2D) arrays of Si nano-resonators can be realized. We also show  
that this Si nano-resonator array with anisotropic periodicity can generate approx-  
imate  $2\pi$  optical phase anisotropy for the transmitted light at the wavelength of  
zero-backscattering. By introducing strong Fano-type coupling into unit cells of the  
array, ultra-steep phase anisotropy can be achieved. These special optical proper-  
ties promise applications in various transmissive photonic devices, and we show their  
potential applications in transmissive polarization conversion and sensing.

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