

Abstract Submitted  
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**Symmetry Breaking and Optical Negative Index of Closed Nanorings** BOUBACAR KANTE, YONG-SHIK PARK, KEVIN O'BRIEN, DANIEL SHULDMAN, NORBERTO DANIEL LANZILLOTTI-KIMURA, ZI JING WONG, XIAOBO YIN, XIANG ZHANG, NSF Nanoscale Science and Engineering Centre, 3112 Etcheverry Hall, University of California, Berkeley, UC BERKELEY TEAM — We report the first experimental demonstration of broadband negative-index metamaterial made solely of closed metallic nanorings. Using symmetry breaking that negatively couples the discrete nanorings, we measured negative phase delay in our composite chess metamaterial. Our approach opens avenues towards topological nanophotonics with on demand linear and non-linear responses.

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