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Symmetry and degeneracy in metamaterial trimers CHIH-WEI CHANG, MING LIU, SUNGHYUN NAM, SHUANG ZHANG, GUY BARTAL, XIANG ZHANG, Nanoscale Science and Engineering Center, University of California at Berkeley — Metamaterial trimers consist of three-coupled split-ring resonators with alternative signs of nearest-neighbor couplings are designed and fabricated. Experimental results from Fourier transform infrared spectroscopy measurements are compared with those of metamaterial dimers. We demonstrate that metamaterial trimers exhibit two-fold degenerate magnetic resonances at infrared frequencies. Remarkably, the degeneracy originates from a new kind of topological symmetry that does not exist in natural materials.

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