

Abstract Submitted
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Topological one-way fiber of second Chern number¹ ZHONG WANG, Tsinghua University, LING LU, Institute of Physics, Chinese Academy of Sciences — We propose topological one-way fiber based on photonic Weyl crystals. By annihilating two Weyl points by supercell modulation in a photonic Weyl crystal, we obtain the photonic analogue of the 3D quantum Hall phase. More importantly, when the modulation takes the shape of helix, one-way fiber modes develop along the winding axis, with the number of modes determined by the spatial frequency of the helix. These single-polarization single-mode and multi-mode one-way fibers, all modes having nearly identical group and phase velocities, are topologically-protected by the second Chern number (C_2) in the 4D parameter space of the 3D wavevectors plus the winding angle of the helices. (Reference: arXiv:1611.01998)

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