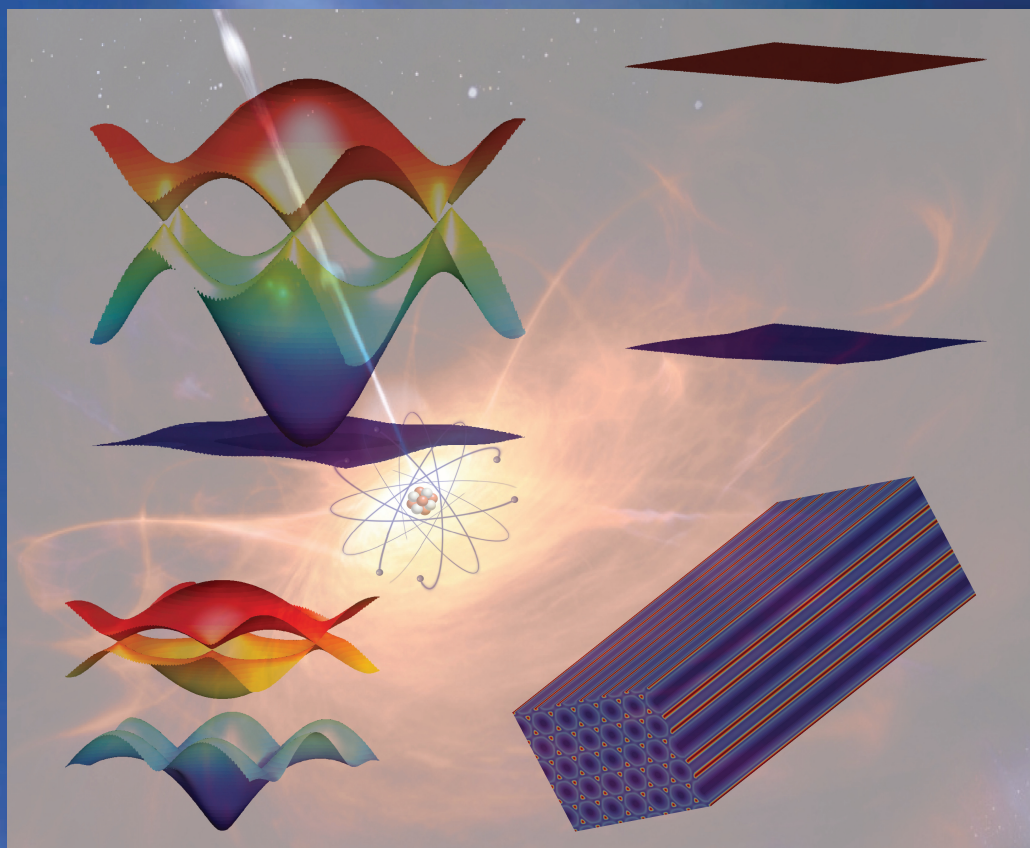


# LASER & PHOTONICS REVIEWS



## Photonic Floquet topological insulators in atomic ensembles

The feasibility of realizing a photonic Floquet topological insulator (PFTI) in an atomic ensemble is demonstrated by **Yiqi Zhang et al. (pp. 331–338)**. The interference of three coupling fields will split energy levels periodically, to form a periodic refractive index structure with honeycomb profile that can be adjusted by different frequency detunings and intensities of the coupling fields. This in turn will affect the appearance of Dirac cones in momentum space. When the honeycomb lattice sites are helically ordered along the propagation direction, gaps open at Dirac points, and one obtains a PFTI in an atomic vapor. An obliquely incident beam will be able to move along the zigzag edge of the lattice without scattering energy into the PFTI, due to the confinement of edge states. The appearance of Dirac cones and the formation of a photonic Floquet topological insulator can be shut down by the third-order nonlinear susceptibility and opened up by the fifth-order one.