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Title: Magnetically tunable magneto-photonic crystals for multifunctional terahertz polarization controller
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Abstract: A multifunctional terahertz polarization controller is designed based on the two-dimensional photonic crystal structure and the ferrite material. The different working devices including a controllable polarizer, a polarization beam splitter and a tunable phase retarder with continuous phase retardations of - pi-pi at 1 THz are controlled by the shift of photonic band gap with different external magnetic fields. By using the plane wave expansion method and the rigorous coupled wave analysis, we calculate the band gap positions and transmittances of device with the variation of magnetic field. The field distribution and phase are simulated by the finite difference time domain method.