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Manipulating the polarization state of light with a metallic stereostructured layer XIANG XIONG, SHANG-CHI JIANG, YUAN-SHENG HU, MU WANG, RU-WEN PENG, Nanjing University — Without introducing dielectric material, we report here for the first time a wave plate constructed merely by metallic stereostructured layer. With an assembly of metallic L-shaped stereostructures (LSSs), the polarization state of the reflected light can be freely manipulated within a broad frequency band. The amplitude ratio of light in two orthogonal directions and the phase difference in these two directions can be tuned accurately and independently. We suggest that our design provides a new approach in realizing broadband wave plate device to manipulate the polarization state of light.

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