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Controlling the Polarization State of Light with a Dispersion-Free Metastructure SHANGCHI JIANG, Nanjing University — By combining the advantages of both a metallic metamaterial and a dielectric interlayer, we demonstrate the general mechanism to construct the dispersion-free metastructure, in which the intrinsic dispersion of the metallic structures is perfectly cancelled out by the thickness-dependent dispersion of the dielectric spacing layer. As examples to apply this concept, a broadband quarter-wave plate and a half-wave plate are demonstrated. By selecting the structural parameters, the polarization state of light can be freely tuned across a broad frequency range, and all of the polarization states on the Poincare sphere can be realized dispersion free.

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