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Imaging with negative-refraction planar waveguides ROBYN WANGBERG, Oregon State University, EVGENII NARIMANOV, Princeton University, VIKTOR PODOLSKIY, Oregon State University — We study the electromagnetic properties of planar waveguides with non-magnetic strongly anisotropic dielectric cores. We develop an analytical description of the mode propagation in these systems and show that their index of refraction can be either positive or negative depending on the configuration. We further demonstrate that it is possible to combine planar waveguide structures to build a planar lens. We study the far-field resolution limit of such a lens and show that it is feasible to achieve resolution better than the free-space diffraction limit. The coupling to and from planar waveguide systems is also explored.

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