

Abstract Submitted
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Superlenses or ultrathin condensers? LUIS GRAVE DE PERALTA, Texas Tech University — Microscope condensers are the oldest and simplest known approach to obtain optical images with subwavelength resolution. Typical condensers used in optical microscopes consist of a combination of bulky lenses and diaphragms designed to illuminate the sample with a cone of light. In this work I describe novel ultrathin condensers with a volume three order of magnitude smaller than the volume of traditional microscope condensers. Since Pendry's proposal for achieving perfect imaging reconstruction, the quest for superlenses has attracted a lot of interest in the optics community. However, the reported resolution of quite a few demonstrated superlenses are comparable to the resolution achievable using traditional microscope condensers. Therefore, one may wonder if modern superlenses are somehow related to the old microscope condenser. In this work I propose the re-identification of recently demonstrated far-field superlenses based on illumination with surface waves as ultrathin condensers. I describe experiments with plasmonics and non-plasmonics ultrathin condensers as examples showing that the correct identification of the physics principles, involved in the resolution improvement obtained using ultrathin condensers, allows for successful strategies for obtaining non-scanning far-field images with resolution values much smaller than the Rayleigh resolution limit.

Luis Grave de Peralta
Texas Tech University

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