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Continuous image distortion in weak gravitational lensing THOMAS KLING, Bridgewater State College — We examine the shearing and magnification of images distorted by the weak gravitational lensing of a thick gravitational lens using a perturbation theory approach based on the optical scalar and geodesic deviation equations with no reference to lens planes. We compare the image distortion from optical scalars with the typical thin-lens image distortion for realistic, axially symmetric astrophysical lens, finding that the thin-lens approach often overestimates the ellipticity by up to 2 sigma near the lens. Application to non-symmetric lenses is discussed.

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