



Nonlinear transformation optics and engineering of the Kerr effect

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The concept of transformation optics is extended to nonlinear electro-dynamics. It is shown that transformation optics favors implicit constitutive relations in terms of energy densities $D \cdot E$ and $B \cdot H$ rather than E^2 and H^2 . The Kerr nonlinearity is studied in detail and the transformation optics based engineering of self-interaction effects is discussed. As a specific example we introduce transformation optics applied on a self-focusing field configuration.

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