FROM CURVED SPACE TO OPTICAL CLOAKING

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Abstract   Transformation optics is a powerful approach to manipulate the propagation of electromagnetic waves [1]. Here, the curvature of space is mimicked by an anisotropic metamaterial, which is described by effective medium theory [2, 3]. An interesting application of such metamaterials is optical cloaking. The metamaterial will prevent that light interact with the cloaked object and in the same time will leave the electromagnetic wave unperturbed. We present the basics of transformation optics and two examples of cloaking devices. This talk will be illustrated with full-wave finite element simulations of feasible cloak designs in homogeneous medium approximation as well as in full geometry.

1.   U. Leonhardt, Science 312, 1777 (2006).
2.   J.B. Pendry, *et al.,* Science 312, 1780 (2006).
3.   W. Cai, *et al.,* Nature Photonics 1, 224 (2007).