

## **Transformation optics shapes metamaterials**

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Metamaterials offer a huge range of new electromagnetic properties: negative refraction, spatial inhomogeneity to name only two. To exploit the possibilities offered in this new world we need a new design tool.

Maxwell's equations are exact at the classical level but lack transparency; Snell's law is elegantly visual, an aid to the imagination, but fails to account for many vital aspects of electromagnetism.

Transformation optics retains an intuitive appeal, replacing the rays of Snell's law with the field lines of Maxwell whose equations is represents exactly.