Perfect lens has sharpest view

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EVERY lens made has been limited by the wavelength of the light it focuses. Until now. Canadian engineers have made the first "perfect lens", which can focus features smaller than the wavelength of the light itself.

John Pendry of Imperial College, London, suggested in 2000 that such a lens might be built using so-called left-handed materials, which refract light in the opposite direction to normal. Such a material would amplify waves that carry information about features smaller than the wavelength of the radiation. Normally, these "evanescent" waves are too weak to make it through a regular lens. Left-handed materials have since been built, but no one was able to create a perfect lens from them.

Now George Eleftheriades of the University of Toronto and colleagues have built one using a mesh of copper strips embedded with capacitors and inductors. The capacitors and inductors interact with microwaves in such a way that the grid acts as a left-handed material at these frequencies. When the researchers shone microwaves on the grid, it amplified and focused the evanescent waves (Physics Review Letters, vol 92, p 117403).