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Seismic invisibility?

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For several decades, it has been known that the anisotropic heat diffusion equation allows for the possibility of exact "thermal invisibility", while more recently it has been shown that analogous properties hold for Maxwell's equations in dielectric and magnetic media. Moreover, through the application of homogenization techniques, it has been possible to approximately construct such materials in the laboratory. There have also been a number of papers investigating the possibility of "elastically invisible" materials, with these ideas having interesting implications for seismology. In this talk, we present some theoretical work on elasticity, arguing that the construction of exact "elastic invisibility" is not possible (at least within conventional forms of continuum mechanics). Moreover, we outline what happens to these various properties when elasticity is coupled to heat conduction, and electromagnetism.