Researchers create “antimagnet” cloaking device

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In what seems like one new cloaking device being discovered after another, researchers in Spain have modeled a device that they say can prevent magnetism from leaking out of a containment container and also prevent it from being detected by an outside magnetic device. Publishing their results on *arXiv*, the team calls their proposed creation an antimagnet, rather than a cloaking device.

Alvaro Sanchez and his colleagues at Universitat Autňnoma de Barcelona have modeled on a computer, a multi-layered containment vessel comprised of different types of metamaterials (materials not found in nature that are created with specific electromagnet properties) that they say should be relatively easy to create in the real world. Their research builds on the work of John Pendry who in 2008, first proposed a method of cloaking a magnetized object by using materials with permeability in one direction less than one, and another that was perpendicular to it.

In the new model, the first layer would be made of a superconducting layer of magnetic material with a permittivity (amount of resistance in an electric field) of zero. The middle layer would be an isotropic ferromagnetic material with constant permeability (degree of magnetism that a material obtains) and the outer layer would be a material with an anisotropic (property of being directionally dependent) constant in all directions.
The result would be a layered coating that would conceal the magnetism of an object inside the cloak from the outside world, while

simultaneously preventing any of the magnetism from leaking out.

The research team hasn't yet attempted to build their antimagnet yet, but say in deploying their computer model the device was able to hide almost all of the magnetism going on inside and didn't leak. They believe if such a device can be built in the real world it would be useful for such applications as creating shields for people with pace-makers or cochlear implants, allowing them to be tested with MRI's and other magnetic based equipment.

The team also notes in their paper that while their model was small and cylindrical, they believe if real-world devices were built, they could be made in virtually any geometric shape.

Via PhysicsWorld

More information: arxiv.org/abs/1107.1647

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