The Japan Times

Scientists closer to making objects invisible

WASHINGTON (AP) Harry Potter and Capt. Kirk would be proud. A team of American and British researchers has developed its own cloak of invisibility.

Well, OK, it's not perfect yet. But it is a start, and it did a pretty good job of hiding a copper cylinder.

University Of Tokyo student Kazutoshi Obana dons his version of a cloak of invisibility, using optical camouflage technology, in 2003. U.S. and British researchers have announced their own method of making an object partially invisible by passing microwaves and radar waves over its surface. AP PHOTO

In this experiment the scientists used microwaves to try to detect the cylinder. Like light and radar waves, microwaves bounce off objects making them visible and creating a shadow, though it has to be detected with instruments.

If you can hide something from microwaves, you can hide it from radar -- a possibility that will fascinate the military.

The new work points the way for an improved version that could hide people and objects from visible light.

Conceptually, the chance of adapting the concept to visible light is good, cloak designer David Schurig said in a telephone interview.

"We did this work very quickly . . . and that led to a cloak that is not optimal," said coauthor David R. Smith, also of Duke. "We know how to make a much better one."

Natalia M. Litchinitser, a researcher at the University of Michigan department of electrical engineering and computer science, said this appears to be the "first, to the best of my knowledge, experimental realization of the fascinating idea of cloaking."

"Although the invisibility reported in this paper is not perfect, this

work provides a proof-of-principle demonstration of the possibility," said Litchinitser.

She added that the next breakthrough is likely to be an experimental demonstration of the cloaking in visible light. "These ideas represent a first step toward the development of functional materials for a wide spectrum of civil and military applications."

The first working cloak was in only two dimensions and did cast a small shadow, Smith acknowledged.

The next step, he said, is to go for three dimensions and to eliminate any shadow.

Viewers can see things because objects scatter the light that strikes them, reflecting some of it back to the eye.

"The cloak reduces both an object's reflection and its shadow, either of which would enable its detection," said Smith.

Looking at a cloaked item, Smith explained: "One would see whatever is behind the cloak. That is, the cloak is, ideally, transparent.

"Since we do not have a perfect cloak at this point, there is some reflection and some shadow, meaning that the background would still be visible, just darkened somewhat."

The ideal cloak would have nearly negligible reflection and virtually no shadowing, Smith said.

The Japan Times: Friday, Oct. 20, 2006

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