



## TECHNOLOGY

# Wave Fingerprint of Complicated Enclosures

## OVERVIEW

Researchers at the University of Maryland have invented a system that exploits the extreme sensitivity of small wavelength waves inside complicated enclosures to create a method that distinguishes between nominally identical objects through their unique “wave fingerprints.”

Current methods that employ waves to distinguish objects are based on RADAR (electromagnetic), SONAR (acoustic), etc. These approaches generally look at waves reflected from the exterior of objects to determine their distance, velocity, and perhaps size and shape. By contrast, this new approach injects waves inside the object and measures the “wave characteristics” of the object.

“Wave Fingerprinting” can be done in both a contact and non-contact and/or remote manner using electromagnetic or acoustic energy beamed or directed at the object of interest. This allows identification of the object from some stand-off distance. The technique is very sensitive to the interior configuration of the object and can be used to measure small changes (tampering). For example, it may be able to distinguish a computer that is turned off from an identical one that is operating. It may also be able to determine what processes are taking place inside the computer (e.g. what programs are running, what keys are being typed, etc.) Other potential uses are in medical diagnostics, such as looking for changes in the acoustic wave properties of body organs due to tumors or cancer.

For additional information, please contact the Office of Technology Commercialization, University of Maryland College Park, via e-mail at [otc@umd.edu](mailto:otc@umd.edu) or phone at 301-405-3947.

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## Additional Information

### INSTITUTION

University of Maryland, College Park

### PATENT STATUS

Patent(s) pending

### LICENSE STATUS

Contact OTC for licensing information

### CATEGORIES

- Imaging devices

- Microelectronics

## **EXTERNAL RESOURCES**

- [US Patent 8,624,605](#)

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