

# APPLIED MATHEMATICS COLLOQUIUM

## CAN ONE HEAR THE HEAT OF A BODY? MATHEMATICS OF THERMOACOUSTIC TOMOGRAPHY.

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### ABSTRACT:

Tomography has been a constant source of wonderful mathematical problems for the last three decades. It involves many mathematical techniques, most notably coming from integral geometry (Radon transform), PDEs, and certainly numerical analysis.

In the last several years, brand new methods of medical imaging have been emerging, a distinguishing feature of which is that they combine different types of signals (e.g., electromagnetic and ultrasound). The most developed among them, albeit still not in clinics, is the so called thermoacoustic (also known as photoacoustic or optoacoustic) tomography (TAT). The mathematical problems arising in TAT are rather complex and require a wide variety of analytic tools. The talk will survey the main problems of TAT and recent progress in this area. No prior knowledge of the subject will be assumed.

**MONDAY, APRIL 7, 2008**  
**4:30 PM**  
**Building 2, Room 105**

*Reception at 4:00 PM in Building 4, Room 174  
(Math Majors Lounge)*

Applied Math Colloquium: <http://www-math.mit.edu/amc/spring08>  
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