1086-35-1642   **John C Schotland*** (`schotland@umich.edu`), Department of Mathematics, University of Michigan, Ann Arbor, MI 48109. *Inverse Problem of Acousto-Optic Imaging.*

A method to reconstruct the optical properties of a highly-scattering medium from acousto-optic measurements is proposed. The method is based on the solution to an inverse problem for the diffusion equation and makes use of the principle of interior control of boundary measurements by an external wave field. (Received September 23, 2012)