1046-35-1979 **Taufiquar Khan**, **Peter Maass** and **Bonnie McAdoo*** (bonniem@clemson.edu). *Using Distinguish-ability Criteria to Optimally Design Sources in Optical Tomography.*

In this paper, we formulate a min-max optimal source design problem in optical tomography. We propose an algorithm to compute the optimal source by maximizing a distinguish-ability criteria for a given set of optical parameters. To find the optimal source, we compute the eigenfunction corresponding to the maximum eigenvalue of a linear operator A that maps $L^2(\partial\Omega)$ or $H^{-1/2}(\partial\Omega)$ to $L^2(\Omega)$ or $H^1(\Omega)$. Therefore the optimal source depends on the choice of the pairs of the function spaces used. We devise algorithms for different choices of these function space pairs and compare the solutions corresponding to these pairs in terms of the distinguish-ability criteria. (Received September 16, 2008)