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**Taufiqar R Khan\*** (khan@clermson.edu), O-201 Martin Hall Box 340975, Clemson University, Clemson, SC 29672, and **Peter Maass** and **Bonnie McAdoo**. *Maximizing Distinguishability Using Optimal Source In Optical Tomography*. Preliminary report.

In this talk, we will discuss a mini-max optimal source design problem in optical tomography. We propose an algorithm for computing the optimal source by maximizing a distinguish-ability criteria for a given set of optical parameters. Finding the optimal source involves computing the maximum eigenvalue and the corresponding eigenfunction 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 the optimal source for four different choices of these function space pairs. We compare the solutions corresponding to these pairs in terms of the distinguish-ability criteria using simulation studies. (Received February 10, 2009)