**Meeting:** 1003, Atlanta, Georgia, SS 4A, AMS-SIAM Special Session on Theoretical and Computational Aspects of Inverse Problems, I

1003-45-1184 **D. Russell Luke*** (rluke@math.udel.edu), Department of Mathematical Sciences, University of Delaware, Newark, DE 19716-2553. *Image synthesis for inverse obstacle scattering using the eigenfunction expansion theorem.*

In recent years several new inverse scattering techniques have been developed that determine the boundary of an unknown obstacle by reconstructing the surrounding scattered field. In the case of sound soft obstacles, the boundary is usually found as the minimum contour of the total field. In this note we derive a different approach for imaging the boundary from the reconstructed fields based on a generalization of the eigenfunction expansion theorem. The aim of this alternative approach is the construction of higher contrast images than is currently obtained with the minimum contour approach. (Received October 04, 2004)