962-T1-198 **Yajni M. Warnapala-Yehiya*** (ymw@alpha.rwu.edu), Department of Mathematics, Roger Williams University, Bristol, RI, and **Tzu C Lin** (lin@uwm.edu), Dept. of Mathematics, Univeristy of Wisconsin-Milwaukee, Milwaukee, WI 53211. *The Numerical solution of exterior Dirichlet problem for Helmholtz's equation via modified Green's functions approach.*

Many scattering and radiation problems are concerned with finding solutions of Helmholtz's equation, in an exterior domain. When one solves the Laplace's equation, the solutions of the exterior Dirichlet problem are expressed as a double layer potential. If we use this method to solve the Helmholtz's equation, it will break down for certain values of k, namely when k is an eigenvalue of the interior Neumann problem. To overcome the non-uniqueness problem arising in integral equation for the exterior boundary value problems for the Helmholtz's equation, Jones suggested adding a series of outgoing waves to the free fundamental solution. In this paper we use Jones modified integral equation approach and solve the exterior Dirichlet problem using the Galerkin method. To this date there are no numerical results obtained for the Jones method. In all our calculations we only added a few terms from the series. In numerical calculations is it is inefficient to add the full series, thus allowing only a finite number of coefficients to be different from zero. According to Jones this is sufficient to ensure uniqueness for the modified integral equations in a finite range of k. In practical applications, one is usually concerned with a finite range of k. (Received August 26, 2000)