

1067-Z1-2337      **J D Menges\*** ([jdmenges@aol.com](mailto:jdmenges@aol.com)), P.O. Box 3045, United States Military Academy, West Point, NY 10997. *Real Time Boundary Element Node Location Optimization*. Preliminary report.

The Complex Variable Boundary Element Method is an application of singular potential functions and includes other functions that are not singular but are fundamental solutions of the governing partial differential equation. These various singular potential functions form a basis whose span of linear combinations is a vector space that can be used to determine the closest element within to the exact solution of the PDE and related boundary conditions. Recently, work on the types of basis functions used in a BEM or CVBEM approximation has shown that considerable improvement in computational accuracy and efficiency can be achieved by optimizing the location of the singular basis functions with respect to both possible locations on the problem boundary and also locations exterior of the problem boundary. To develop such optimum locations for the modeling nodes, the approach presented in this work is to develop a Real Time Boundary Element Node Location module that enables the program user to click and drag nodes throughout the exterior of the problem domain. The provided module interfaces with the CVBEM program, built within program Mathematica, so that various types of information flows to the display module as the node is moved, in real time. (Received September 22, 2010)