1116-VC-1782 **Shelvean Kapita*** (kapita@udel.edu), Department of Mathematical Sciences, 331 Ewing Hall, University of Delaware, Newark, DE 19716, and **Peter Monk** and **Timothy Warburton**.
Residual Based Adaptivity and PWDG Methods for the Helmholtz Equation.

We present a study of two residual a posteriori error indicators for the plane wave discontinuous Galerkin (PWDG) method for the Helmholtz equation. In particular, we study the h-version of PWDG in which the number of plane wave directions per element is kept fixed. First, we use a slight modification of the appropriate a priori analysis to determine a residual indicator. Numerical tests show that this is reliable but pessimistic in that the ratio between the true error and the indicator increases as the mesh is refined. We therefore introduce a new analysis based on the observation that sufficiently many plane waves can approximate piecewise linear functions as the mesh is refined. Numerical results demonstrate an improvement in the efficiency of the indicators. (Received September 21, 2015)