1086-65-1050   **Li Fan***, 656 W. Kirby, 1252 FAB, Detroit, MI 48201, and **Fatih Celiker** and **Zhimin Zhang**.
Hybridizable Discontinuous Galerkin Methods for a Naghdi-type arch model.

We introduce and analyze Hybridizable Discontinuous Galerkin methods for a Naghdi type arch model. The main feature of these methods is that they can be implemented in an efficient way through a hybridization procedure which reduces the globally coupled unknowns to approximations to the displacement, bending moment and rotation at the element boundaries. Finally, we display extensive numerical results to ascertain the influence of the stabilization parameters on the accuracy of the approximation. In particular, we find specific choices for which all the variables, converge with the optimal order of $k+1$ when each of their approximations are taken to be piecewise polynomial of degree k. (Received September 18, 2012)