1057-65-175 **Michael J. Neilan*** (neilan@math.lsu.edu), Center for Computation and Technology, Louisiana State University, Baton Rouge, LA 70803, and **Susanne C. Brenner** (brenner@math.lsu.edu), Center for Computation and Technology, Louisiana State University, Baton Rouge, LA 70803. *A $\mathcal{C}^0$ interior penalty method for a fourth order elliptic singular perturbation problem.*

In this talk, we develop a $\mathcal{C}^0$ interior penalty method for a fourth order singular perturbation elliptic problem in two dimensions on polygonal domains. Using some a posteriori error analysis techniques, we are able to show that the method converges in the energy norm uniformly with respect to the perturbation parameter under minimal regularity assumptions. In addition, we analyze the convergence of the numerical solution to the unperturbed second order problem. Finally, we perform some numerical experiments which back up the theoretical results. (Received January 21, 2010)