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**Susanne C. Brenner** ([brenner@math.lsu.edu](mailto:brenner@math.lsu.edu)), Center for Computation and Technology, Johnston Hall, Louisiana State University, Baton Rouge, LA 70803, **Thirupathi Gudi\*** ([tgudi@cct.lsu.edu](mailto:tgudi@cct.lsu.edu)), Center for Computation and Technology, Johnston Hall, Louisiana State University, Baton Rouge, LA 70803, and **Li Yeng Sung** ([sung@math.lsu.edu](mailto:sung@math.lsu.edu)), Department of Mathematics, 248 Lockett Hall, Louisiana State University, Baton Rouge, LA 70803. *An A Posteriori Error Estimator for a Quadratic  $C^0$  Interior Penalty Method for the Biharmonic Problem.*

In this talk we present a reliable and efficient residual-based *a posteriori* error estimator for a quadratic  $C^0$  interior penalty method for the biharmonic problem on polygonal domains. We will outline the *a posteriori* error analysis, which involves new tools that can be applied to other finite element methods for fourth order problems, and also present numerical results that illustrate the performance of the error estimator. This is joint work with Susanne C. Brenner and Li-yeng Sung. (Received January 25, 2008)