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**Susanne C. Brenner, Li-yeng Sung** and **Yi Zhang\*** (yzhang24@math.lsu.edu), 103 Lockett Hall, Department of Mathematics, Baton Rouge, LA 70803. *A Quadratic  $C^0$  Interior Penalty Method for an Elliptic Optimal Control Problem with State Constraints.*

We consider a second order elliptic optimal control problem with state constraints on convex polygonal domains. We will present theoretical and numerical results for a quadratic  $C^0$  interior penalty method that solves the optimal control problem numerically as a fourth order variational inequality. This is joint work with Susanne C. Brenner and Li-yeng Sung. (Received September 21, 2012)