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Siddhartha P Chakrabarty* (pratin@math.uic.edu), Department of MSCS (m/c 249), 851 S Morgan St, Chicago, IL 60607, and **Floyd B Hanson** (hanson@math.uic.edu), Department of MSCS (m/c 249), 851 S Morgan St, Chicago, IL 60607. *Optimal control of drug delivery to brain tumors for a two dimensional case using Galerkin finite element method.*

The Galerkin finite element method is used to study the optimal drug delivery for brain tumors. The optimal control problem is motivated by goal of reducing the tumor burden and is formulated in terms of a pseudo Hamiltonian. A distributed parameter method based on application of variational calculus is used to obtain a coupled system of forward and backward PDEs. These PDEs are solved using the Galerkin finite element method on a circular disc, to have a more realistic two dimensional structure of brain. Simulation results show a significant reduction of tumor density over time. (Received September 28, 2005)