1014-49-1197 **David R. Adams** and **Volodymyr Hrynkiv***, University of Tennessee, Mathematics Department, Knoxville, TN 37996-1300, and **Suzanne M. Lenhart**. *Optimal control of a biharmonic obstacle problem.* Preliminary report.

We consider an optimal control problem of a variational inequality whose underlying pde operator is biharmonic. The obstacle is taken to be the control and the solution to the obstacle problem is taken to be the state. The goal is to find the optimal obstacle so that the state is close to a desired profile while H^3 norm of the obstacle is not too large. We prove that an optimal control exists and provide necessary optimality conditions using approximation techniques. (Received September 27, 2005)