# Abstract

Stability of the solution of the multidimensional unilateral obstacle problem with respect to the variations of the coefficients of the corresponding second order partial differential operator is studied in the present thesis.

A Hölder type stability estimate in the second order Sobolev space of functions is established for the solution of the elliptic obstacle problem.

Rodrigues ([25, 1987]) proved the stability result with respect to bounded external force functions under the nondegeneracy condition. We generalize this result to the case of arbitrary functions belonging to the space $L^p(D), p \geq 2$.

Further parabolic obstacle problem is studied with different principal parts in the parabolic differential operator and applied to the American put option problem with various local volatility functions. The estimate of the area between the early exercise boundaries through the uniform distance between the local volatility functions is obtained.