High order finite difference schemes for obstacle problems

Kristian Debrabant (University of Southern Denmark), Olivier Bokanowski

New finite difference schemes based on Backward Differentiation Formulae in time are proposed for the approximation of one-dimensional nonlinear diffusion equations with an obstacle term. Stability estimates are obtained for one of the schemes. Numerical experiments illustrate the convergence of the proposed schemes, and they are applied to the American option problem in mathematical finance.