1033-65-174 **Wenyuan Liao*** (wliao@math.ucalgary.ca), Department of Mathematics and Statistics, University of Calgary, 2500 University Drive NW, Calgary, Alberta T2N 1N4, Canada, and **Abdul Q. M. Khaliq** (akhaliq@mtsu.edu), Department of Mathematical Sciences, Middle Tennessee State University, Murfreesboro, TN 37123. *High Order Compact Finite Difference Scheme for Solving Nonlinear Black-Scholes equation with Transaction Costs.*

Recently several nonlinear Black-Scholes equations were widely used to model option price when transaction cost is considered. Due to the complicity the analytical solution to such model is seldom available, so numerical method is fairly important and necessary. In this paper, an unconditionally stable high order compact finite difference scheme is proposed. The compact lgorithm is fourth-order accurate in both the temporal and spatial dimensions. Except for price of option, the new algorithm also computes the hedging delta $\frac{\partial V}{\partial S}$ as well. Two numerical examples are presented to demonstrate the accuracy and efficiency of the proposed scheme. (Received September 10, 2007)