1051-35-35 **Myles Baker*** (myles_baker@baylor.edu), One Bear Place #81135, Waco, TX 76798, and **Daniel Sheng** (ur4sail@gmail.com). *On the consistency of finite difference approximations of the Black-Schole's equation on nonuniform grids.*

The Black-Schole's equation has been used for modeling option pricing extensively. However, when the volatility of financial markets creates irregularities, the model equation is difficult to solve numerically. Nonuniform grids are often introduced for achieving a better accuracy. This paper studies the numerical consistency of the popular explicit, implicit and leapfrog finite difference schemes for solving the Black-Schole's equation when nonuniform meshes are utilized. Mathematical tools including Taylor expansions are used throughout our analysis. The consistency ensures the basic reliability of the finite difference schemes based on choices of temporal and variable spacial derivative approximations. Truncation error terms are derived and discussed, and numerical experiments using C, C++ and MATLAB are given to illustrate our discussions. We show that, though orders of accuracy are lower compared with their peers on uniform grids, nonuniform algorithms are easy to implement and use for turbulent financial markets. (Received July 27, 2009)