

1046-65-83

**Fred J. Hickernell\*** ([hickernell@iit.edu](mailto:hickernell@iit.edu)), Room E1-208, Applied Mathematics, Illinois Institute of Technology, 10 W. 32nd Street, Chicago, IL 60616. *Evaluating Options Whose Payoffs Depend on Continuously Monitored Asset Prices.*

The price of an option may be expressed as the expected value of the payoff function, which depends on the asset price. This expected value or integral is typically approximated by a sample average of the payoff over  $n$  asset price paths. If the payoff function depends only on the asset price at  $d$  times, then the option price is a  $d$ -dimensional integral. A more realistic model in many cases treats the payoff function as depending on a continuously monitored asset price. Then the option price is an infinite dimensional integral. For computational purposes one must still use a finite ( $d$ ) dimensional approximation to this integral, but then one encounters the problem of choosing the dimension  $d$  relative to the sample size,  $n$ . In this talk an error analysis is presented that demonstrates how this choice should be made, given a budget of  $N = nd$  computer operations. Computational examples are presented for simple random and low discrepancy sampling, the latter providing a faster convergence rate. (Received July 22, 2008)