

Efficient Algorithm for High-dimensional Simulation (Abstract)

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This paper deals with a recent modification of the Monte Carlo method known as quasi random Monte Carlo. Under this approach, one uses specially selected deterministic sequences rather than random sequences as in Monte Carlo. These special sequences are known as low discrepancy sequences and have the property that they tend to be evenly dispersed throughout the unit cube. For many applications in finance, the use of low discrepancy sequences seems to provide more accurate answer than random sequences. One of the main drawbacks of the use of low discrepancy sequences is that there is no obvious method of computing the standard error of the estimate. This means that in performing the calculations, there is no clear termination criterion for the number of points to use. We address this issue here and consider different procedures for overcoming this problem. We test these procedures using a high dimensional example of a derivative security. The exact price of this security can also be calculated very simply and so we have a benchmark against which to test our calculations. We find that one of the procedures gives promising results.

