Abstract

Sequential Monte Carlo (SMC) methods are a class of Monte Carlo-based algorithms, which are used to approximate expectations w.r.t a sequence of related density functions. SMC methods have been applied successfully in engineering, statistics and physics. However, these approaches are seldom used in option pricing. In this thesis, we present an application of SMC methods for pricing discrete barrier options. Various techniques including importance sampling and resampling scheme are discussed to reduce the variances.

Keywords Option pricing; Sequential Monte Carlo.