

The inverse options pricing problem

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Abstract

We consider the problem of recovery of the volatility coefficient of the Black-Scholes equation for option prices as functions of time and of stock price. We give most recent results about uniqueness and stability of reconstruction of volatility from market data and discuss relations with stochastic partial differential equations. We suggest two algorithms of numerical reconstruction, using a parametrized and the linearized inverse problem. We give the results of some numerical tests. For simplicity, we handle only European options.