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Option pricing in a discrete time model for the limit order book

In this talk we build a discrete time model for the structure of the limit order book, so that the price per share depends on the size of the transaction. We deduce the value of a portfolio when the investor trades using market orders and a bank account with different interest rates for lending and borrowing. In this setting, we find conditions to rule out arbitrage and solve the problem of pricing and hedging an European call and put options.