

Last twenty years have seen a tremendous growth of the financial markets both in trading volumes and in sophistication of instruments. This ever-increasing complexity of the market structure necessitates use of mathematically advanced models from the side of market participants. So far, the prevalent paradigm for these models has been the stochastic analysis as a branch of applied mathematics. In the last few years however, there has been an influx of purely physical concepts and methodology, constituting nascent field of econophysics. To what extent this new approach is useful remains, however, an open question. In my bachelor thesis I will focus on one subfield of econophysics, namely quantum finance. First, I will give an overview of both stochastic analysis and the new quantum finance paradigm. Then using the framework of quantum theory and quantum field theory I will construct a model of European stock options.