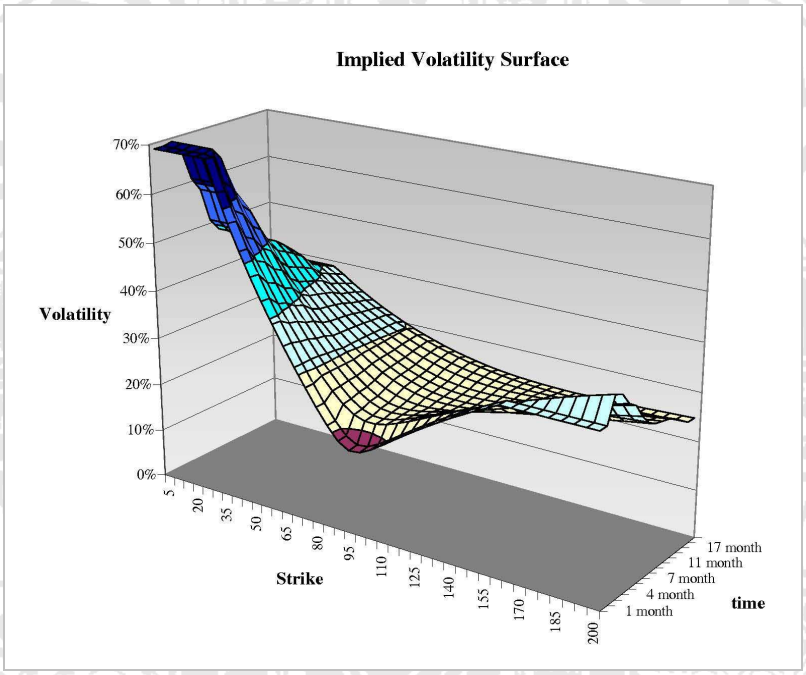
PHYSIKALISCHES KOLLOQUIUM

AM 18. JULI 2011 UM 17 UHR C.T.

IM GROßEN HÖRSAAL



WORKING IN INVESTMENT BANKING AS A PHYSICIST: EQUITY DERIVATIEVES STRUCTURING

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In this talk I will give a brief introduction into the art of structuring equity derivatives, that is pricing and designing all types of securities like options or certificates which are based on underlyings from stock market like shares or indices. I start with the Nobel Prize winning Black-Scholes model that assumes a log-normal distribution of the daily returns, and discuss then which adjustments have to be made in practice. One of the most important parameters is the volatility - a measure for the fluctuation of the prices. According to Black-Scholes, volatility should be constant, but to meet the real prices in the option market within the framework of this model, the definition of a volatility surface is necessary. Considering the partial derivatives of the option prices, e.g. with respect to the underlying price, the volatility, the remaining time to option expiry or the interest rates, leads to the definition of the “Greeks”, which enable the monitoring and eliminating of various market risks, thus the hedging of the portfolio. Combining several simple derivatives to more complex structures makes the creation of individual risk-return profiles for all types of investors possible. In case of exotic structures which cannot be divided into their constituents, Monte-Carlo-simulations are used.

Working as a structurer in investment banking can be an interesting opportunity for physicists to apply their analytical skills in the exciting environment of financial markets.