Short Time Statistical Properties and Roughness of Stock Prices in the NYSE

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We consider the statistical properties of stock price fluctuations in the NYSE. In particular we focus on the high frequency regime, from seconds to a single day. We discuss various possibilities to characterize the roughness of the price fluctuations and show the important role of finite size effects. The properties of the roughness within a single day are studied with model systems and real data. The combination of finite size effects together with the fat tail properties is shown to lead to various new effects which could have basic and applied relevance.