Fluctuation patterns in high-frequency financial asset returns

T. Preis[a,b], **W. Paul**[a], and **J. J. Schneider**[a]

[a]Institute of Physics, Johannes Gutenberg University of Mainz
Staudinger Weg 7, D-55099 Mainz, Germany, EU
preis@uni-mainz.de

[b]Artemis Capital Asset Management GmbH
Gartenstr. 14, D-65558 Holzheim, Germany, EU
mail@tobiaspreis.de

We introduce a new method for quantifying pattern-based complex short-time correlations of a time series [1]. Our correlation measure is 1 for a perfectly correlated and 0 for a random walk time series. When we apply this method to high-frequency time series data of the German DAX future, we find clear correlations on short time scales. In order to subtract trivial autocorrelation parts from the pattern conformity, we introduce a simple model for reproducing the antipersistent regime and use alternatively level 1 quotes. When we remove the pattern conformity of this stochastic process from the original data, remaining pattern-based correlations can be observed.

Keywords
econophysics, financial markets, time series analysis

References

[1] T. Preis, W. Paul, and J. J. Schneider, "Fluctuation patterns in high-frequency financial asset returns," *Europhysics Letters*, **82**, 68005, 2008.