Basic properties of self-modulation processes in market

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Occurrence of transactions in financial markets is known to be nicely approximated by a non-stationary Poissonian process whose mean value modulated continuously by the moving average of latest intervals [1]. This type of stochastic process is named as the self-modulated process and it is generally proved theoretically that the corresponding power spectrum is characterized by the 1/f spectrum[2]. I will review these results comparing with real data in Yen-Dollar market. I will also talk application of the self-modulation process to the fluctuations of heartbeat rate and Internet traffics.

[1] Misako Takayasu, Hideki Takayasu, and Mitsuhiro P. Okazaki、
Transaction interval analysis of high resolution foreign exchange data
[H.Takayasu(editor), **Empirical Science of Financial Fluctuations** – The Advent of Econophysics, (ISBN 4-431-70316-0) Springer Verlag, Tokyo, 2002, pp.18]
[2] Misako Takayasu and Hideki Takayasu,
Self-modulation processes and resulting generic 1/f fluctuations
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