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Stock price process and long memory in trade signs

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Abstract. Empirical study on tick by tick data in stock markets shows us that there exists a long memory in trade signs and signed trade volumes. This means that an order flow is a highly autocorrelated long memory process.
We present a mathematical model of trade signs and trade volumes in which traders decompose their orders into small pieces. We prove that fractional Brownian motions are obtained as a scaling limit of the signed volume process induced by the model.

Key words: trade signs, long memory, Hurst index, fractional Brownian motion, Polymer expansion

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