

## Analysis of high-resolution product prices in an online shopping mall

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Recently, huge point-of-sale (POS) databases containing detailed records of all customer purchases in many stores have been attracted the attention of both physicists and economists[1,2]. In this conference, we will show statistical laws of high-resolution product prices in an online shopping mall.

"Kakaku.com" is the famous online shopping mall in Japan. There are about 1,500 electronics retail stores. About 12 million persons come to the shopping mall in one month. Kakaku.com always ranks the stores from the best price to the worst price for each product. As a result, many stores are engaged in a price war.

We investigate a time series graph of average prices of a LCD television in all stores. We can observe a fractal property of the prices in the time axis. The Hurst exponent of the price is 0.5, and the auto-correlation function for the price change decays very quickly. Therefore, the statistics of product price changes is close to random walk. However, volatility of the product price has a long memory. These statistical laws can be also observed in financial markets[3,4]. In this conference, we show statistical similarities between a product price in competitive online markets and a stock price in financial markets.

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