

Condensed Matter Theory Center Seminar



Friday, November 16
2:30 pm, Physics Building 2205

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“Scaling Approach to Financial Modeling”

Anomalous scaling is a well-established stylized fact in finance. However, its validity for sampled densities of aggregated asset returns over time intervals of various durations has limited forecasting power. It only provides a precise link between unconditioned densities at any two different durations. In this talk I will show that one can use scaling for conditioned forecasting: ideas inspired by the renormalization group allow to infer from the scaling properties of the aggregated return the joint probability density of its elementary components. In this construction, which is at the basis of a novel modeling of asset dynamics, one is led to introduce both endogenous and exogenous mechanisms driving the market, in a way which allows them to be distinguished in the analysis of specific time series. This leads in particular to the determination of an endogenous volatility.

After reviewing the main mathematical developments and some connections with other models, I will discuss some specific applications, dealing with both high and low frequency data. These will include the description of after-shock Omori regimes, trading strategies, and option pricing.