Dynamically Emergent Correlations

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The goal of this talk is to show that strong correlations between particles may emerge dynamically due to a common stochastically fluctuating environment, even when there is no direct built-in interaction between particles. These correlations grow with time, eventually driving the system into a 'strongly correlated' nonequilibrium stationary state with nontrivial properties. I will demonstrate this in an exactly solvable model of noninteracting Brownian particles in a harmonic trap whose stiffness switches between two values at a constant rate. This model has been recently realized experimentally in optically trapped colloidal particle systems. Experimental results agree very well with theoretical predictions.

References:

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