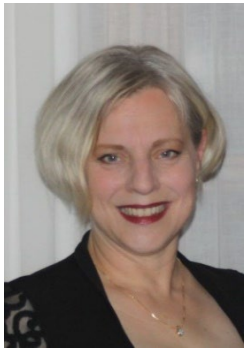
SFB 1432

Colloquium

Universität Konstanz

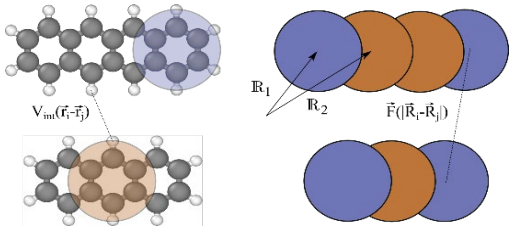
Feb 2, 2023
Talk at 15:15
in P 603
refreshment afterwards



Prof. Dr. Tanja Schilling

Universität Freiburg

How to make noise



In physics, we hardly ever describe a system in terms of all of its microscopic degrees of freedom. We usually resort to effective coarse-grained models, which predict the behaviour of "relevant" system properties. One widely used effective equation of motion for coarse-grained variables is the Langevin equation, a stochastic differential equation, in which the effect of the neglected degrees of freedom is encoded in friction terms and stochastic noise.

In this colloquium we will review the steps of derivation and approximation that are required to obtain the Langevin equation from the full microscopic description. We will discuss the interplay between the potential of mean force and the memory kernel, the range of validity of the second fluctuation dissipation theorem, and the stochastic interpretation of the fluctuating force, i.e. the noise.

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