Delay Langevin equations and its functional approach

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Title: Delay Langevin Equations and its Functional Approach
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Abstract We present an exact functional characterization of linear delay Langevin equations driven by any noise structure defined through its characteristic functional. This method relies on the possibility of finding an explicity analytical expression for each realization of the delayed stochastic process in terms of those of the driving noise. General properties of the transient dissipative dynamics are analyzed. The corresponding interplay with a color Gaussian noise is presented. As a full application of our functional method we study a model for population growth with non-Gaussian fluctuations: the Gompertz model driven by multiplicative white shot noise.

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