

Field theory of reaction diffusion processes

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The language of reaction diffusion processes can be used to describe many complex systems very elegantly. Powerful field theoretic tools, in particular diagrams and field theoretic renormalisation, exist to analyse the resulting theories, to determine the underlying physics and to make predictions about the asymptotic behaviour on the large spatio-temporal scale. This approach can be applied to a very wide range of phenomena in complex systems, including those with excluded volumes constraints or those “living” on networks. In the lectures, I will introduce and discuss the theory with the aim that the audience will be able to apply the techniques successfully to their problems. I will provide further discussions and exercises in the classes to get our hands dirty.