

# New Frontiers for Interaction-Induced States

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Condensed matter physics is the physics of solids and liquids (condensed phases of matter). It is the study of the complex behaviour of a large number of interacting particles such that their collective behaviour gives rise to emergent properties. In this talk, I will discuss some interesting quantum condensed matter systems with their intriguing emergent phenomena arising from complexity.

In this talk, I will focus on critical Fermi surface states, where there is a well-defined Fermi surface, but no quasiparticles, as a result of strong interactions between the Fermi surface and some emergent massless boson(s). I will outline a framework to extract the low-energy physics of such systems in a controlled approximation, using the tool of dimensional regularization.