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Holographic mean field theory and Kondo lattice Problem

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The usual AdS/CMT is based on the equivalence of the quantum critical point and the black hole. However, at the critical point, there is no scale, therefore we can not encode any shape or scale that characterizes the material and therefore we can not answer following question: About what material we are talking about? So we need to extend the AdS/CMT by introducing one or a few scale to make AdS/CMT an interesting condensed matter theory. We answer this question by following the Landau-Ginzberg paradigm in the context of the Holography. Namely, we study the effects of the symmetry breaking to the fermion dispersion relation. Interestingly, we found all the interesting features of the topology material is found in this way. Based on this formalism we discuss two applications: 1) Topology of the quantum material and 2) Kondo lattice.

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