

Higher Dimensional Theories and the Banks-Zaks Fixed Point of QCD.

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QCD and other asymptotically free field theories possess the unique characteristic of the beta-function having a non-trivial fixed point. This is known as the Banks-Zaks fixed point and is believed to have connections with the chiral symmetry phase transition. Using perturbative quantum field theory techniques we can construct higher dimensional extensions of scalar and gauge theories. These can be linked to 4-dimensional models via a non-trivial fixed point. The aim of this talk will be to introduce the framework of building towers of theories over multiple dimensions, while also demonstrating how UV properties of one QFT could potentially drive the IR dynamics of another. I will also discuss the renormalization scheme invariance of QCD critical exponents that can be calculated using the Banks-Zaks fixed point.

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