

High Scale Supersymmetry and UV Physics

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In the absence of New Physics at the TeV scale, GUTs still provide a good motivation for supersymmetry at higher scales. Notably, it is typically non-trivial to UV complete GUTs into string theory, but one promising possibility is found in F-theory. I shall argue, therefore, that considerations from string theory should play a central role in the construction of such models of high scale supersymmetry. Specifically, F-theory GUTs lead to calculable UV threshold corrections to the running of the gauge couplings, which can in principle improve the precision of unification. I will examine the prospect of precision unification in models of F-theory High Scale Supersymmetry and the experimental constraints on this model from the non-observation of proton decay. Further, I will discuss to what extent the proton lifetime can be extended due to the localization of X,Y gauge bosons in higher dimensions.