Branes and Applications to Gauge Theories

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Abstract

In this thesis we present applications of string theory (and branes) to the study of gauge theories. In the first part we investigate renormalization group flows from gauged supergravity, noncommutative theories and their supergravity duals, new brane solutions in type IIB supergravity with fewer supersymmetries, and the scalar profile for the non-abelian self-dual string. The second part of the thesis is devoted to the study of warped compactifications of type IIA supergravity with fluxes and to the recent approach by Dijkgraaf and Vafa for computing effective superpotentials of $\mathcal{N} = 1$ supersymmetric gauge theories. We present our results in seven appended papers with a chapter complementing each of the papers.

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