Decoding M-theory?

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Abstract

In this thesis various aspects of supergravity theories are discussed. In eleven dimensions, M-theory corrections to ordinary supergravity are constructed in superspace by relaxing the usual torsion constraint. In ten dimensions, various methods of constructing branes in B-fields are described. It is shown that the different formulations yield equivalent solutions. Finally, the noncommutative theories on branes in background tensor fields are discussed. And SL(2,$\mathbb{Z}$)-covariant generalisation of the noncommutative Yang-Mills and noncommutative open string theories on the D3-brane and (p, q) 5-branes is presented. Deformation independence is explained and used to derive open brane metrics and generalised theta parameters for the decoupled open brane theories.

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