

In this article the authors study the so-called ω -deformed $\mathcal{N} = 8$ supergravity [1, 2] in four dimensions. Apparently there are a few motivations for this study. First, the origin of ω parameter is not yet clarified fully in 11-dimensional supergravity and corresponding string/ M theory. Second, in the context of AdS/CFT duality holographic duals of the ω -deformed supergravity theories are not yet investigated sufficiently.

This article presents roughly two results. One is that, by analyzing fluctuations of the $\mathcal{N} = 8$ deformed theory around the AdS vacuum, the authors find that the maximum degree of supersymmetry which is compatible with any boundary conditions (for non-vanishing ω) is $\mathcal{N} = 3$. The other and main result is that the authors carry out consistent reduction of the $\mathcal{N} = 8$ deformed theory to $\mathcal{N} = 6$ deformed supergravity and calculate ω -dependent 3-point correlation functions of the reduced $\mathcal{N} = 6$ theory. The 3-point correlators are compared with those of undeformed $\mathcal{N} = 6$ theory [3] and it is argued that the correlators in the $\omega = \pi/8$ theory correspond to amplitudes in the so-called ABJM model. The authors also discuss (in the appendix) that the ω -deformed $\mathcal{N} = 6$ supergravity can be suitably embedded into the ordinary 11-dimensional or 10-dimensional type IIA supergravity.

References

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