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M-theory giant gravitons from the perspective of type IIA superstring theory

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Abstract

In this paper, we study the low-energy dynamics of the giant graviton of M-theory and its 10-dimensional interpretation in type IIA superstring theory. Considering a background geometry of the form $AdS_7 \times S^4$ in M-theory and assuming a giant graviton as a spherical M2-brane probe wrapping a 2-sphere and rotating along a great circle of S^4 , after compactifying the theory to 10 dimensions, we find that the giant is identical to a spherical D2-brane with a uniform $U(1)$ magnetic flux on its worldvolume. Hence we find the relations between 11-dimensional quantities of a giant graviton and their 10-dimensional equivalents.

Keywords: M-theory, string theory, giant gravitons, D-branes

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