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Supersymmetry of IIA Warped Flux AdS and Flat backgrounds

SAMUEL BECK, Kings College London, GEORGE PAPADOPOULOS, King's College London, JAN GUTOWSKI, University of Surrey — Although there have been a wide variety of AdS backgrounds in supergravity theories have been enumerated, there has not previously been an attempt to determine the exact supersymmetry fractions these backgrounds preserve. Additionally, when the supersymmetries of these backgrounds are discussed, it is typically under the assumption that the Killing spinors factor into a Killing spinor on the AdS space and a Killing spinor on the transverse space. We have identified the fractions of supersymmetry preserved by the most general warped flux AdS and flat backgrounds in both massive and standard IIA supergravities, and have determined that the Killing spinors do not, in general, factorize. We have found that $AdS_n \times_w M^{10-n}$ backgrounds preserve $2^{\lfloor \frac{n}{2} \rfloor} k$ Killing spinors for $n \leq 4$ and $2^{\lfloor \frac{n}{2} \rfloor + 1} k$ for $4 < n \leq 7$ supersymmetries, $k \in \mathbf{N}_+$. Additionally, we have proven that, if the fields and the transverse space are restricted so as to satisfy the conditions of the Hopf maximum principle, then the Killing spinors of these backgrounds are exactly the zero-modes of Dirac-like operators on the transverse space, M^{10-n} . These results are similar to results that have been found for IIB and heterotic backgrounds.

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