

Abstract

The field strength of the NS two-form is considered as a torsion in the space-time geometry in order to construct all the leading worldsheet corrections from the known *Riemann*⁴ terms in the critical II string theory for the bosonic backgrounds; backgrounds of the metric, the NS two-form and the dilaton. Then Sen entropy formalism is utilised to evaluate the contributions of all the cubic alpha-prime corrections to the entropy for a four dimensional BPS dyonic black hole which can be realised as a toroidal compactification of a 10-D bosonic background. These contributions are found non-vanishing and negative. The implication of these results on the OSV conjecture will be discussed