

## Abstract

Recently, Sen proposed a new Entropy function formalism to derive the entropy of extremal black holes, especially in the context of Higher derivative gravity and in arbitrary dimensions. He showed that, "Entropy is the Legendre transform of the Lagrangian Density of the System". The analysis does not make use of supersymmetry and also does not depend on the specific structure of Higher Derivative terms. We shall discuss the Entropy function formalism, taking the example of Heterotic four charge black holes and with the inclusion of a specific class of Higher derivative terms (Gauss-Bonnet terms).