

## Rényi Entropy Correction to Expanding Universe

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**Abstract :** The Rényi entropy comprises a group of data estimates that sums up the well-known Shannon entropy, acquiring a considerable lot of its properties. It appears as unqualified and restrictive entropy, relative entropy, or common data, and has found numerous applications in information theory. In the Rényi's argument, the area law of the black hole entropy plays a significant role. However, the total entropy can be modified by some quantum effects, motivated by the randomness of a system. In this note, by employing this modified entropy relation, we have derived corrections to Friedmann equations. Taking this entropy associated with the apparent horizon of the Friedmann-Robertson-Walker Universe and assuming the first law of thermodynamics,  $dE = T_A (dS)_A + WdV$ , satisfies the apparent horizon, we have reconsidered expanding Universe. Also, the second thermodynamics law has been examined.

**Keywords :** Friedmann equations, dark energy, first law of thermodynamics, Reyni entropy

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