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Renyi Entropy and Corrections On Newton's law of Gravity and Friedmann Equations

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The Jacobson have shown that Gravity force is not fundamental phenomenon and one able to consider it as emergent one. According to his idea, gravity is only the first law of thermodynamics of space-time. The next step in this direction was forwarded by Verlinde whom argued that gravity is not fundamental force and can be interpreted as the entropic force due to changing of entropy associated with the information on the holographic screen. Hence, he derived Newton's law of gravity, the Poisson equation and Einstein's field equations. In Jacobson and Verlinde studies entropy plays the key role. Therefore, modifying entropy expression yields some deviations in Newton's law of gravity and Evolution of Universe. In this context, by using Renyi entropy expression and with aid of Verlinde argument, Newton's gravity equation and corrections on Friedmann equations are reconsidered. Also, the second law of thermodynamics of whole Universe is investigated.

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