Abstract Submitted
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Generalized entanglement entropy and the Ryu-Takayanagi proposal[1] OCTAVIO OBREGÓN, Universidad de Guanajuato — Non-equilibrium systems with a long-term stationary state that possess as a spatio-temporally fluctuating quality β can be described by a superposition of several statistics, "superstatistics" [1]. Recently [2,3] we have proposed entropy(ies) that depend only on the probability distribution p_l and which expansion has as a first term the Shannon-entropy. We find the corresponding generalization of the von-Neumann entropy and calculate it for the model considered by Ryu and Takayangi. This results in $S = e^E(1-e^{-\frac{E}{e^E}}) \sim E - \frac{E^2}{2e^E} + ...(1)$, where $E = \frac{c}{3} \cdot \log\left(\frac{L}{\pi a}\sin\left(\frac{\pi l}{L}\right)\right)$, is the usual (2D CFT) entanglement entropy. In this set up the proposed "area law" $S_A = \frac{\text{Area of } \gamma A}{4G_N^{(d+2)}}$ would need to be modified in order to have agreement with the entropy Eq.(1). It is beyond the scope of this abstract to suggest an expression for $S_{A-modified}$ and its implications for a modified theory of gravity.

[1] C. Beck and E.G.D. Cohen, Phys. A 322 (2003) 267.
[2] O. Obregon, Entropy 12(2010) 2067.
[3] O. Obregon and A. Gil-Villegas. Phys. Rev. E 88 (2013) 062146.

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