

Entanglement entropy, quarter-BPS lines and the cosmological constant

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Abstract

We investigate the entanglement entropy of a non-relativistic quantum state. In particular, we consider a model of a quantum vacuum in a geodesic three-dimensional space-time. We find that the entanglement entropy is not proportional to the square of the potential energy of the state. The entropy is a function of the surface area of the space-time and of the entanglement entropy of the space-time dependent on the model parameter. The entropy is obtained by looking at the intensity of the photons at the detector. We show that the entropy is obtained from the energy of the photons and the entanglement entropy of the space-time dependent on the model parameter.