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A note on the Cardy-Verlinde formula. (English) Zbl 1039.83513
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Summary: We generalize the results of *E. Verlinde* [On the holographic principle in a radiation dominated universe, hep-th/0008140] to the case of the $(n + 1)$ -dimensional closed FRW universe satisfying a general equation of state of the form $p = w\rho$. We find that the entropy of the universe can no longer be expressed in a form similar to the Cardy formula, when $w \neq 1/n$. As a result, in general the entropy formula does not coincide with the Friedmann equation when the conjectured bound on the Casimir energy is saturated. Furthermore, the conjectured bound on the Casimir energy generally does not lead to the Hubble and the Bekenstein entropy bounds.

MSC:

83F05 Cosmology

Cited in 8 Documents

Keywords:

$(n + 1)$ -dimensional closed FRW universe; entropy; Casimir energy bound

Full Text: [DOI](#) [arXiv](#)

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