Zeta-like entropy for dynamic nonlinear systems in 4D

Paolo Colonna, Giuseppe Cusin, J. A. F. C. Daz-Azevedo, Paolo Pisano

Abstract

We study Zeta-like entropy for the dynamic nonlinear scalar and gravity systems in four dimensions. We begin by reviewing the significance of the Zeta-like entropy (ZNE) for dynamic nonlinear systems in four dimensions. We then discuss the quantum entanglement entropy (QE) and the experimental measure of the ZNE. The study of the ZNE is then extended to nonlinear systems in four dimensions. We discuss the ZNE in the context of a two-parameterized nonlinear model for the simple scalar and gravity sector. The model is chosen to be a first choice for a fourth-order nonlinear scalar field theory and a second choice for a fourth-order nonlinear scalar field theory. The results in the two-parameter model are qualitatively the same as those in the first case.