Multifractals, Field Theory and the Large-Scale Structure of the Universe

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This brief pointer draws attention to the growing evidence for multifractal geometry in effective field theory and the large-scale structure of the Universe [1-14]. Early Universe cosmology is nonintegrable due to unbalanced ultraviolet fluctuations [1]. New evidence challenges the Lambda-CDM model and hints to a potential revision of the cosmological principle underlying the FRW cosmology [10-11]. Stochastic cosmology may be able to account for the Vacuum Energy Parameter describing the accelerated expansion of the Universe [9]. Finally, the flow towards strange attractors and multifractals appears to be universal outside thermodynamic equilibrium and provides novel insights into several unsettled challenges raised by the Standard Model of particle physics [2, 12-14]

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