Abstract

Novel Symmetry and Symmetry-Breaking Induced Complexity in Cosmological Evolution †

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Scale-Running of the propagator coupling-constants can induce complexity phenomena [1] involving novel symmetries and symmetry-breakings with antiscreening/screening effects. In the context of cosmological evolution, such effects can yield new insights with dark matter consequences. Starting from the nonperturbative, one-particle irreducible renormalization-group differential generator for coarse-graining transformations involving intrinsic fluctuations, such Lifshitz-like complexity may be demonstrated analytically for the crossover phenomenon involving commensurate and incommensurate ordered states in gravitational evolution at large scales [2]. Interesting explicit examples based on fractional calculus will be described to demonstrate this intriguing process [3]. This idea can easily be extended to a variety of dynamic and condensed matter systems.

Conflicts of Interest: The authors declare no conflict of interest.

References

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