

The entropy functional, the information path functional's essentials and their connections to Kolmogorov's entropy, complexity and physics

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The paper introduces the recent results related to an entropy functional on trajectories of a controlled diffusion process, and the information path functional (IPF), analyzing their connections to the Kolmogorov's entropy, complexity and the Lyapunov's characteristics. Considering the IPF's essentials and specifics, the paper studies the singularities of the IPF extremal equations and the created invariant relations, which both are useful for the solution of important mathematical and applied problems.

Keywords: Additive functional; Entropy; Singularities, Natural Border Problem; Invariant

Subjects: **Information Theory (cs.IT)**; Systems and Control (cs.SY); Optimization and Control (math.OC); Statistics Theory (math.ST)

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