

# LOCAL ENTROPY AND DESCRIPTIVE COMPLEXITY

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We investigate local entropy theory, particularly the properties of having uniform positive entropy and completely positive entropy, from a descriptive set-theoretic point of view. We show natural classes of dynamical systems which form Borel sets as well as coanalytic non-Borel sets. In particular, we show that the class of systems with uniform positive entropy and the class of systems with the shadowing property having completely positive entropy is Borel. Meanwhile, the class of mixing systems on a Cantor space is coanalytic but not Borel, and the class of systems on the interval and other orientable manifolds with CPE are coanalytic complete.

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