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Oleg Eroshkin* (oleg.eroshkin@unh.edu), Department of Mathematics and Statistics,
Kingsbury Hall, University of New Hampshire, Durham, NH 03824. *Pluripolarity of manifolds of
Gevrey class and asymptotics of n -width.*

Let D be a bounded domain in \mathbb{C}^m containing a compact set K . We consider the compact set $A_K^D \subset C(K)$ of continuous functions f that allow holomorphic extensions to D satisfying the inequality $\|f\|_D \leq 1$.

We study how the “massiveness” of A_K^D is related to geometric properties of K . It is the standard approach to characterize the “massiveness” of compacts by means of n -width or ε -entropy, introduced by A. N. Kolmogorov.

We define Kolmogorov dimension of K in terms of asymptotic behavior of n -width (or ε -entropy) of A_K^D . This notion is related to pluripotential properties of K . If Kolmogorov dimension of compact $K \subset \mathbb{C}^m$ less than m , then K is pluripolar.

E. Bedford proved that real-analytic non-generic manifolds are pluripolar. Recently D. Coman, N. Levenberg and E. Poletsky proved that curves of appropriate Gevrey class are pluripolar. We generalize these results to non-generic manifolds of Gevrey class, estimate the Kolmogorov dimensions of such manifolds and show that these estimates are sharp. (Received December 30, 2005)