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The local Hölder exponent for the dimension of invariant subsets of the circle

We consider for each t the set $K(t)$ of points of the circle whose forward orbit for the doubling map does not intersect the interval $(0, t)$, and look at the dimension function $\eta(t) := \text{H.dim } K(t)$. We prove that at every bifurcation parameter t , the local Hölder exponent of the dimension function equals the value of the function $\eta(t)$ itself. A similar statement holds for general expanding maps of the circle: namely we consider the topological entropy of the map restricted to the survival set, and obtain bounds on its local Hölder exponent in terms of the value of the function. Joint work with C. Carminati.