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COUNTEREXAMPLES TO THE OPEN PROBLEM ON THE MINIMAL CENTER OF ATTRACTION

Let (X, f) be a topological dynamical system, where X is compact metric space and $f : X \rightarrow X$ a continuous map. Denote by $\mathcal{M}_x$ the set (of invariant probability measures of f) consisting of limit points of the sequence $\frac{1}{n} \sum_{i=0}^{n-1} \delta_{f^i(x)}$, where δ_x is the atomic probability measure on X with support $\{x\}$. We give, among others, a characterization of points x such that $\mathcal{M}_x$ contains a measure whose support is C_x, the minimal center of attraction of x, and provide examples showing that the characterization is nontrivial. In particular, the standard shift on two symbols, (Σ_2, σ), contains a quasi-weakly almost periodic point z which is not weakly almost periodic such that C_z is not the support of an invariant measure. This solves in negative a problem given by Z. Zhou and L. Feng, Nonlinearity 17 (2004), 493 – 502.