Ergodic properties of some maps from the exponential family

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We consider entire maps of the form $z \mapsto \lambda \exp(z)$, where $\lambda \in \mathbb{C}$ is such that the orbit of zero is bounded and such that all periodic points are repelling. For such maps it was known that a σ-finite absolutely continuous invariant measure exists. However, even in the simplest case where $\lambda = 2\pi i$, it was an open question whether the measure could be finite. We show it cannot, i.e., for the class of maps considered, no absolutely continuous invariant probability measure can exist.