Let $\varphi: S^1 \to S^1$ be a $C^r$ mapping ($r \geq 2$) of the circle $S^1 = \mathbb{R}/\mathbb{Z}$ onto itself which satisfies $|\varphi'(t)| > 1$ with the exception of a finite set of fixed points $t_1, \ldots, t_r$ where $|\varphi'(t_i)| = 1$ holds. If for each $t_i$ there is an integer $m_i$ satisfying $2 \leq m_i \leq r$ and $\varphi^{(m_i)}(t_i) \neq 0$, then $S^1$ carries an absolutely continuous $\varphi$-invariant measure which is necessarily infinite. For this fact the $C^2$ smoothness of $\varphi$ is necessary, since for each $\varepsilon > 0$ there are $C^{2-\varepsilon}$ mappings $\varphi: S^1 \to S^1$ with a finite absolutely continuous invariant measure.

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