Mathematics > Classical Analysis and ODEs

Continuity of Translation Operators

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For a Radon measure μ on $\bbR,$ we show that $L^{\infty}(\mu)$ is invariant under the group of translation operators $T_t(f)(x) = {$f(x-t)$}\ (t \in \bbR)$ if and only if μ is equivalent to Lebesgue measure m. We also give necessary and sufficient conditions for $L^p(\mu),\1 \leq p < \infty,$ to be invariant under the group $\{T_t\}$ in terms of the Radon-Nikodym derivative w.r.t. m.

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