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Variational principle for the spectral exponent of polynomials of weighted composition operators

ABSTRACT. Let $e^{\varphi}T_{\alpha}$ be a weighted composition operator acting in the space $L^p(X,\mu)$, $1 \leq p \leq \infty$, where X is a compact Hausdorff space, $\alpha : X \to X$ is a continuous mapping, μ is an α-invariant measure with $supp\ \mu = X$ and $\varphi \in C(X)$. We study the spectral exponent of the operators being the polynomials of weighted composition operators, i.e. operators of the form $\sum_{k=0}^{N} a_k (e^{\varphi}T_{\alpha})^k$. Under assumption that coefficients a_k are positive we derive the relationship between the Legendre-Fenchel transform of $\ln r(\sum_{k=0}^{N} a_k (e^{\varphi}T_{\alpha})^k)$ and the Legendre-Fenchel transform of $\ln r(e^{\varphi}T_{\alpha})$. It allows us to establish the variational principle for the spectral exponent of polynomials of weighted composition operators.