ERGODIC OPTIMIZATION FOR RENEWAL TYPE SHIFTS

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We consider a class of countable Markov shifts $\mathcal{R}$ and a locally Hölder potential φ. We prove that the existence of $\varphi-$optimal measures is closely related to the behaviour of the pressure function $t \to P(t\varphi)$. Using a Theorem by Sarig it is possible to prove that there exists a critical value $t_c \in (0, \infty]$ such that for $t < t_c$ the pressure is strictly convex and real analytic and for $t > t_c$ is linear. We prove that if t_c is finite then there are no $\varphi-$optimal measures and if it is infinite then $\varphi-$optimal measures do exist.