

Weighted Polynomial Approximation and Equilibrium Measures

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Let $w = e^{-Q}$ be a weight on $[-1, 1]$, let μ_w be the associated equilibrium measure, and v be its density (wherever it exists) with respect to linear measure. A. Kuijlaars showed that if $v(t) \sim |t|^{-a}$ with some $a > 0$, then if $w^n P_n \rightarrow f$ uniformly on $[-1, 1]$ with some sequence P_n of polynomials of degree $n = 1, 2, \dots$, then f must vanish at 0. Show this if only $v(t) \geq c|t|^{-a}$ is true.