

Local Spectral Theory for Operators with Thin Spectra

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Abstract

We consider bounded linear operators T on a Banach space X such that the spectrum $\sigma(T)$ of T has Lebesgue measure 0 (or locally: such that for some open set Ω the intersection with $\sigma(T)$ has measure 0). Using Domar's criteria for the existence of subharmonic majorants we obtain decomposability criteria for operators satisfying certain growth conditions near the spectrum (or near the thin part of the spectrum). In particular this gives criteria for the existence of non-trivial hyper invariant subspaces. It is shown how these methods allow to prove the non-quasi analyticity for certain algebras of functions on some compact fractal sets of measure 0.