

DOMINATING SETS FOR ANALYTIC AND HARMONIC FUNCTIONS AND COMPLETENESS OF WEIGHTED BERGMAN SPACES

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[Received 11 December 2000. Read 25 June 2001. Published 31 December 2002.]

ABSTRACT

A set $E \subset \Omega$ is holomorphically dominating for Ω if $\sup_{z \in E} |f(z)| = \sup_{z \in \Omega} |f(z)|$ for all holomorphic functions f on Ω . As follows from a result of Stray, this property is equivalent to the inaccessibility of the Aleksandrov compactification point $*$ (of Ω) from $\Omega \setminus \bar{E}$. Moreover, it is equivalent to a large number of other statements (old and new) of holomorphic, harmonic and topological nature, including that a certain weighted Bergman space with $p = \infty$ is a Banach space. We extend this to the cases of harmonic functions in \mathbf{R}^n and holomorphic functions in \mathbf{C}^n . We also present some results on when weighted Bergman spaces are (quasi)-Banach spaces, the case $p = \infty$ being characterised by the result mentioned above.