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holomorphically convex

Canonical name	HolomorphicallyConvex
Date of creation	2013-03-22 15:04:33
Last modified on	2013-03-22 15:04:33
Owner	jirka (4157)
Last modified by	jirka (4157)
Numerical id	8
Author	jirka (4157)
Entry type	Definition
Classification	msc 32E05
Synonym	holomorph-convex
Related topic	PolynomiallyConvexHull
Related topic	SteinManifold
Defines	holomorphically convex hull

Let $G \subset \mathbb{C}^n$ be a domain, or alternatively for a more general definition let G be an n dimensional complex analytic manifold. Further let $\mathcal{O}(G)$ stand for the set of holomorphic functions on G .

Definition. Let $K \subset G$ be a compact set. We define the *holomorphically* of K as

$$\hat{K}_G := \{z \in G \mid |f(z)| \leq \sup_{w \in K} |f(w)| \text{ for all } f \in \mathcal{O}(G)\}.$$

The domain G is called *holomorphically convex* if for every $K \subset G$ compact in G , \hat{K}_G is also compact in G . Sometimes this is just abbreviated as *holomorphically convex*.

Note that when $n = 1$, any domain G is holomorphically convex since when $n = 1$ $\hat{K}_G = K$ for all compact $K \subset G$. Also note that this is the same as being a domain of holomorphy.

References

- [1] Lars Hörmander. , North-Holland Publishing Company, New York, New York, 1973.
- [2] Steven G. Krantz. , AMS Chelsea Publishing, Providence, Rhode Island, 1992.