# On the hyperconvexity of holomorphically convex domains in the space $\mathbf{C}^n$

Satoru Watari

## §1. Preliminaries

In 1974, Jean-Luc Stehlé has given in his paper [4], such a conjecture[1] that holomorphically convex domain $D=\mathring{\bar{D}}$ in $\mathbf{C}^n$ is hyperconvex. In 1976, Jean-Louis Ermine has shown in his paper [1] that this conjecture is positive in case of holomorphically convex Reinhardt domains[2]. But, in general case, it is as yet unknown that this conjecture is positive or not. Evidently, holomorphically convex domain in $\mathbf{C}^n$ can be approximated by an increasing sequence of analytic polyhedra and analytic polyhedra are hyperconvex.

The purpose of this papei is to give such a proof that this conjecture is positive in case of holomorphically convex domains of some type by means of the above approximation.

**Definition 1.**[3] *Let $D$ be a relatively compact open set in $\mathbf{C}^n$. $D$ is said to be hyperconvex if and only if there exists a plurisubharmonic function $p(z)$ defined on a neighbourhood of $\bar{D}$ and negative on $D$, such that*

$$\{z\in D \mid p(z) \leqq c\}$$

*is a relatively compact set in $D$ for any $c<0$.*

The following lemma is easily shown from Definition 1.

1) Cf. [4], pp. 167, 177 in which $D$ is relatively compact in $\mathbf{C}^n$.
2) Cf. [1], pp. 131—133.
3) Cf. [4], p. 163.