PROCEEDINGS OF THE
AMERICAN MATHEMATICAL SOCIETY
Volume 45, Number 3, September 1974

ERRATUM TO VOLUME 39

Su-shing Chen, *Carathéodory distance and convexity with respect to bounded holomorphic functions*, Proc. Amer. Math. Soc. 39 (1972), 305–307.

The author would like to thank A. Hirschowitz for pointing out a gap in the proof of Theorem 2, which is not true due to a counterexample of N. Sibony in C. R. Acad. Sci. Paris 275 (1972), 973–976. However we have the following replacement.

Theorem 2. *Let X be a complex space such that X is $B(X)$-separable. X is complete with respect to the Carathéodory distance on X if and only if, for each discrete sequence $\{p_k\}$ in X, there exists a sequence $\{f_k\}$ in $F_{+(p)}$ such that* $\sup|f_k(p_k)| = 1$.

Proof. Consider the closed ball $\overline{B}(a, p) = \{q \in X | c(p, q) \leq a\}$ with center $p \in X$ and radius $a > 0$. If $\overline{B}(a, p)$ is not compact, then there exists a discrete sequence $\{p_k\}$ in $\overline{B}(a, p)$. The sequence $\{p_k\}$ is also discrete in X, since $\overline{B}(a, p)$ is closed. The existence of $\{f_k\}$ in $F_{+(p)}$ such that $\sup|f_k(p_k)| = 1$ leads to a contradiction. In fact, for each $q \in \overline{B}(a, p)$, $f \in F_{+(p)}$,

$$\rho(0, f(q)) \leq C(p, q) \leq a,$$

$$\frac{1}{2}\log\frac{1 + |f(q)|}{1 - |f(q)|} \leq a$$

and

$$|f(q)| \leq \frac{e^{2a} - 1}{e^{2a} + 1} < 1.$$

Conversely, if $\{p_k\}$ is a discrete sequence in X, then there exists a nested sequence $\{\overline{B}(a_k, p)\}$ of closed balls with center $p \in X$ and radii a_k approaching to ∞ such that $c(p_k, p) = a_k$. Thus there exists a sequence $\{f_k\}$ in $F_{+(p)}$ such that $\sup|f_k(p_k)| = 1$.

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Received by the editors December 26, 1973.