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HOLOMORPHIC CURVES WITH MAXIMAL DEFICIENCY SUM

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Introduction. Let f be a non-degenerate holomorphic mapping of the m-dimensional complex Euclidean space $\boldsymbol{C}^m$ into the n-dimensional complex projective space $\boldsymbol{P}^n$. Then, for any q hyperplanes $\{H_\nu\}_{\nu=1}^q \subset \boldsymbol{P}^n$ in general position, the inequality so called Nevanlinna's defect relation $\sum_{\nu=1}^q \delta(H_\nu, f) \leqq n+1$ is well known (See Stoll [6] or Vitter [9]). What can we say about a mapping f with maximal deficiency sum?

In the case $m=n=1$, the following result is known: If f is a meromorphic function of finite order which satisfies $\delta(\infty, f)=1$ and $\sum_{a\neq\infty} \delta(a, f)=1$, then f is of positive integral order and of regular growth (See Edrei-Fuchs [1]).

In the case when $m, n \geqq 1$, if there exist $n+1$ hyperplanes $\{H_\nu\}_{\nu=0}^n \subset \boldsymbol{P}^n$ in general position such that $\sum_{\nu=0}^n \delta(H_\nu, f)=n+1$, then f is of positive integral order or infinite order and is of regular growth (Mori [4] or Noguchi [5]).

In this note we treat the case of holomorphic curves with maximal deficiency sum.

§1. Notations.

Let $f: \boldsymbol{C} \to \boldsymbol{P}^n$ be a non-degenerate holomorphic curve and let L be the standard line bandle over $\boldsymbol{P}^n$. For a homogeneous coordinate system $w=[w_0, \cdots, w_n]$ on $\boldsymbol{P}^n$,

$$h_\alpha(w) = \sum_{k=0}^n \left| \frac{w_k}{w_\alpha} \right|^2 \qquad \text{in} \quad U_\alpha = \{w : w_\alpha \neq 0\}$$

is a metric on $L \to \boldsymbol{P}^n$. Let $\phi = \{\phi_\alpha\} \in H^0(\boldsymbol{P}^n, O(L))$ be a holomorphic section. Since $|\phi_\alpha(w)|/h_\alpha(w) = |\phi_\beta(w)|/h_\beta(w)$ on $U_\alpha \cap U_\beta$, we put

$$|\phi|^2(w) \equiv \frac{|\phi_\alpha(w)|^2}{h_\alpha(w)}$$

and call it the norm of ϕ. We put $\omega = \omega_L \equiv \frac{\sqrt{-1}}{2\pi} \partial\bar{\partial} \log h_\alpha$ which is the curvature form on L. The quantity

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