ILLINOIS JOURNAL OF MATHEMATICS
Volume 28, Number 4, Winter 1984

A DEFECT RELATION FOR LINEAR SYSTEMS ON COMPACT COMPLEX MANIFOLDS[1]

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Introduction

In 1979 Shiffman ([7]) conjectured that if $f: \mathbf{C}^m \to \mathbf{P}_n$ is a non-constant meromorphic map and if $D_1, \ldots, D_q$ are distinct hypersurfaces of degree d in $\mathbf{P}_n$ such that no point is contained in the support of $n+1$ distinct D_j and $f(\mathbf{C}^m) \nsubseteq \operatorname{supp} D_j$ for all j, then

$$\sum_{j=1}^{q} \delta_f(D_j) \leq 2n, \tag{1}$$

where δ_f denotes the Nevanlinna defect. To support his conjecture Shiffman proved (1) for a class of meromorphic maps of finite order.

To extend the class that satisfies (1) we use the method of associate maps which was introduced in 1941 by Ahlfors [1], generalized and developed by Weyl [11], Stoll [8], Cowen-Griffiths [4] and Wong [12]. Namely, (1) holds either if $f(\mathbf{C}^m)$ is contained in a line of $\mathbf{P}_n$ or is a projection of a "special exponential map", i.e., an exponential map satisfying (6.1) (see Section 6). More in general we introduce an auxiliary defect τ_f, which we express explicitly and for all meromorphic maps $f: \mathbf{C}^m \to \mathbf{P}_n$ we prove

$$\sum_{j=1}^{q} \delta_f(D_j) \leq n(1 + \tau_f). \tag{2}$$

Therefore in order to prove (1) for all meromorphic maps it would be sufficient to prove $\tau_f \leq 1$.

To add generality we prove (2) for meromorphic maps $f: \mathbf{C}^m \to X$, where X is a compact complex n-dimensional manifold and for $D_1, \ldots, D_q \in |L|$, where L is a spanned line bundle.

Received March 22, 1982.

[1] This research was partially supported by a grant of the Consiglio Nazionale delle Ricerche (Italy).