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ON THE MINIMUM MODULUS OF A SUBHARMONIC OR AN ALGEBROID FUNCTION OF $\mu_* < 1/2$

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0. Introduction. Let $y(z)$ be an N-valued entire algebroid function defined by an irreducible equation

$$F(z, y) = y^N + A_1(z)y^{N-1} + \cdots + A_N(z) = 0. \tag{1}$$

Denoting the j-th determination of y by y_j, we set

$$M(r, y) = \max_{|z|=r} \max_{1 \leq j \leq N} |y_j(z)|, \qquad m^*(r, y) = \min_{|z|=r} \max_{1 \leq j \leq N} |y_j(z)|.$$

Let A be the system $(1, A_1, \cdots, A_N)$ and put

$$B(z) = \max_{1 \leq j \leq N} |A_j(z)|, \quad M(r, B) = \max_{|z|=r} B(z), \quad m^*(r, B) = \min_{|z|=r} B(z).$$

Then Ozawa [12] showed that

$$\frac{N \log^+ m^*(r, y)}{\log M(r, y)} \geqq \frac{\log m^*(r, B) + O(1)}{\log M(r, B) + O(1)}. \tag{2}$$

And he obtained the following theorem by making use of Kjellberg's method [10].

THEOREM A. *Let $y(z)$ be an N-valued entire algebroid function of lower order μ, $0 \leqq \mu < 1/2$. Then*

$$\overline{\lim_{r \to \infty}} \frac{N^2 \log m^*(r, y)}{\log M(r, y)} \geqq \cos \pi\mu. \tag{3}$$

We can improve his result by two different methods. The first method is due to Baernstein [3]. He proved there

THEOREM B. *Let f be a nonconstant entire function. Let β and λ be numbers with $0 < \lambda < \infty$, $0 < \beta \leqq \pi$, $\beta\lambda < \pi$. Then either*

(a) *there exist arbitrarily large values of r for which the set of θ satisfying $\log |f(re^{i\theta})| > \cos \beta\lambda \log M(r, f)$ contains an interval of length at least 2β, or else*

(b) $\lim_{r \to \infty} r^{-\lambda} \log M(r, f)$ *exists, and is positive or ∞.*

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