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VALUE DISTRIBUTION OF MEROMORPHIC MAPPINGS INTO COMPACTIFIED LOCALLY SYMMETRIC SPACES

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Introduction

There have been many works to generalize the Nevanlinna theory (especially, his second main theorem) to higher dimensional case (cf., e.g., [5], [17], [21]). While the so called equidimensional holomorphic or meromorphic mappings $f: W \to V$ between algebraic varieties have been well studied, we do not know very much about $f: W \to V$ with $\dim W < \dim V$ (cf. Noguchi [13], [14] and Siu [20]). So far, we have to put some special restriction on target spaces or on the divisors of the target spaces. In this paper, we will establish an inequality of the second main theorem type for meromorphic mappings into a compactification of a locally symmetric space.

Let $\mathcal{D}$ be a bounded symmetric domain in $\boldsymbol{C}^m$ and Γ a neat arithmetic discrete subgroup of the holomorphic transformation group $\mathrm{Aut}(\mathcal{D})$ of $\mathcal{D}$. Let $f: \boldsymbol{C}^n \to \overline{\Gamma \backslash \mathcal{D}}$ be a meromorphic mapping, where $\overline{\Gamma \backslash \mathcal{D}}$ is a smooth toroidal compactification of $\overline{\Gamma \backslash \mathcal{D}}$. Nadel [11] proved that if Γ is sufficiently small, then the image $f(\boldsymbol{C})$ $(n=1)$ of any non-constant holomorphic curve $f: \boldsymbol{C} \to \overline{\Gamma \backslash \mathcal{D}}$ is contained in some special analytic subset of $\overline{\Gamma \backslash \mathcal{D}}$. Here we assume that $f(\boldsymbol{C}^n) \cap (\Gamma \backslash \mathcal{D}) \neq \emptyset$. Then, of course, f hits the boundary divisor $D = \overline{\Gamma \backslash \mathcal{D}} - (\Gamma \backslash \mathcal{D})$, since $\Gamma \backslash \mathcal{D}$ is (complete) hyperbolic. We are concerned with how often f hits D. We prove the following inequality of the second main theorem type for $f: \boldsymbol{C}^n \to \overline{\Gamma \backslash \mathcal{D}}$ of maximal rank:

$$\text{(i)} \qquad K\{T_f(r, [D]) + T_f(r, K(\overline{\Gamma \backslash \mathcal{D}}))\}$$
$$\leqq N(r, \mathrm{Supp}\, f^*D) + O(\log r) + O(\log^+ T_f(r, [D])) \| .$$

Here K is a positive constant depending only on $\mathcal{D}$ and n, $\mathrm{Supp}\, f^*D$ is the support of the pull-back divisor f^*D and the sign "$\|$" means as usual in the Nevanlinna theory that the estimate holds as $r \to \infty$ outside an exceptional subset with finite length (see Theorem (2.2)).

In the Nevanlinna theory for meromorphic functions, one dimensional complex projective space $\boldsymbol{P}^1(\boldsymbol{C})$ minus three distinct points (a, b and c) is of a

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