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On meromorphic maps into the complex projective space

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§ 1. Introduction.

In [10], the big Picard theorem was generalized by P. Montel to the case of a meromorphic function $\varphi(z)$ ($\not\equiv 0$) which satisfies the condition that the multiplicities of any zeros of $\varphi(z)$, $\frac{1}{\varphi(z)}$ and $\varphi(z)-1$ are always multiples of p, q and r, respectively, where p, q and r are arbitrarily fixed positive integers with

$$\frac{1}{p}+\frac{1}{q}+\frac{1}{r}<1.$$

The main purpose of this paper is to give analogous generalizations of the extension theorems and degeneracy theorems of holomorphic maps into the N-dimensional complex projective space $P_N(C)$ omitting some hyperplanes given in the previous papers [4] and [5].

Let $\{H_i;\ 1\leqq i\leqq q\}$ $(q\geqq N+2)$ be hyperplanes in $P_N(C)$ located in general position. Associate with each H_i a positive integer m_i $(\leqq +\infty)$ such that

$$\sum_{i=1}^{N+1}\frac{1}{m_i}+\frac{1}{m_q}<\frac{1}{N} \tag{1.1}$$

when they are arranged as $m_1\geqq m_2\geqq\cdots\geqq m_q$ by a suitable change of indices. We consider in this paper a meromorphic map f of a domain D in C^n into $P_N(C)$ with the property that $f(D)\not\subset H_i$ $(1\leqq i\leqq q)$ and the intersection multiplicity of the image of f with each H_i at a point w is always a common multiple of all m_j's for j with $w\in H_j$. If the image of f omits any H_i $(1\leqq i\leqq q)$, then we can take $m_i=\infty$ or $\frac{1}{m_i}=0$ in the above and so (1.1) is necessarily valid. Holomorphic maps studied in [4] and [5] are thus a special case of what is treated here.

The first main result in this paper is the following generalization of Theorem A in [4].

Let f be a meromorphic map of a domain D excluding a nowhere dense analytic subset S into $P_N(C)$ with the above property. Then f has a meromor-