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On the independency of differential forms on algebraic varieties.

By

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In the classical algebraic geometry the following theorem has been hitherto admitted generally.

Let V^r be a projective model of an algebraic, variety, ω^i $(i=1,\cdots,s)$ linearly independent differential forms of the first kind on V, k a common field of definition for ω_i and W a generic hyperplane section of V with reference to k. Then ω_i's induce on W linearly independent differential froms $\bar{\omega}_i$ of the first kind.

Recently J. Igusa proved this rigorouly using the theory of harminic integrals.[1] It seems to be true that it holds also for the ground field of arbitrary characteristic, but the proof is not yet obtained. In this paper, modifying the above we shall prove the following:

Let V be an algebraic variety in a projective space, ω_i $(i=1,\cdots,s)$ linearly independent differential forms on V(they may be not of the first kind), k a common field of definition for ω_i and C_m a generic hypersuface section of V of order m with reference to k. Then the induced differential forms $\bar{\omega}_i$ on C_m by ω_i are also linearly independent provided m is sufficiently large.

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§ 1. Some results on uniformizing parameters.[2]

Definition. Let X and Y bo two cycles on a Variety V and Q a Point on V. If any component of X containing Q intersect pro-

1) Cf. J. Igusa (1). The numbers in bracket refer to the bibliography at the end of the paper.

2) We seall use the notations and terminology adopted in Weil (5).