146. *On Algebraic Threefolds of Parabolic Type*

By Kenji UENO
Department of Mathematics, Faculty of Science, Kyoto University, Kyoto, Japan

(Communicated by Kunihiko KODAIRA, M. J. A., Dec. 13, 1976)

§ 1. In the present note all algebraic varieties are assumed to be complete, irreducible and defined over the complex number field $\boldsymbol{C}$. A non-singular algebraic variety is called an algebraic manifold.

Let V be an algebraic manifold and we let K_V (resp. Ω_V^p) denote the canonical bundle (resp. the sheaf of germs of holomorphic p-forms) of V. Put

$$P_m(V)=\dim_C H^0(V, \mathcal{O}(mK_V)), \qquad m=1,2,3,\cdots,$$
$$h^{p,0}(V)=\dim_C H^0(V, \Omega_V^p), \qquad p=1,2,3,\cdots,\dim V.$$

It is well-known that these are birational invariants. Further we put

$$p_g(V)=P_1(V),$$
$$q(V)=h^{1,0}(V).$$

$p_g(V)$ (resp. $q(V)$) is called the geometric genus (resp. the irregularity) of V. For a singular algebraic variety V we define

$$p_g(V)=p_g(V^*),$$
$$q(V)=q(V^*),$$

where V^* is a non-singular model of V.

If $P_m(V)$ is positive for a natural number m, we define a rational mapping (the m-th canonical mapping)

$$\begin{array}{cccl} \Phi_{mK}: & V & \longrightarrow & \boldsymbol{P}^N \\ & \cup\!\!\!\shortmid & & \cup\!\!\!\shortmid \\ & z & \longmapsto & (\varphi_0(z):\varphi_1(z):\cdots:\varphi_N(z)) \end{array}$$

where $\{\varphi_0, \varphi_1, \cdots, \varphi_N\}$ is a basis of $H^0(V, \mathcal{O}(mK_V))$. We set $N(V)=\{m>0 \mid P_m(V)>0\}$. The *Kodaira dimension* $\kappa(V)$ of an algebraic manifold V is defined by

$$\kappa(V)=\begin{cases} \max\limits_{m\in N(V)} \dim \Phi_{mK}(V) & \text{if } N(V)\neq\emptyset, \\ -\infty & \text{if } N(V)=\emptyset. \end{cases}$$

The Kodaira dimension $\kappa(V)$ is a birational invariant. Therefore, for a singular algebraic variety V we define

$$\kappa(V)=\kappa(V^*),$$

where V^* is a non-singular model of V.

An algebraic manifold V is called *parabolic type* if $\kappa(V)=0$. This is equivalent to saying that $P_m(V)\leqq 1$ for every positive integer m and there exists a positive integer n such that $P_n(V)=1$.