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A correction to "On a characterization of a Jacobian variety"

By

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The writer was informed that in the proof of Theorem 3 in the quoted paper (Mem. Col. Sci. Kyoto Univ., Series A, Vol. XXXII, pp. 1-19, 1959-60) there is a sentence which does not make sense. As a matter of fact there is a statement that "In order to do so, it is sufficient to show that ${}^t\beta_{iX}$ is surjective for $1 \leqslant i \leqslant m$, since we have ${}^t\beta_X = ({}^t\beta_{1X}, \cdots, {}^t\beta_{mX})$". In our case this is true but it has to be justified. In the following, we are going to give it.

Using the same notations as in the proof of Theorem 3, let u be a generic point of A over a common field of definition K for A and for every variety and mapping introduced in the proof. Then from $\alpha(C, X) = \delta$, $I(C, X) = n$, $\dim A = n$, and from Weil [8], Th. 1, it follows that $C \cdot X_u$ consists of n distinct points x_i with multiplicities 1 and that $\dim_K(x_i) = 1$, $\dim_K(x_1, \cdots, x_n) = \sum_1^n \dim_K(x_i)$. Then, from the definition of the ${}^t\beta_{iX}$, we have

$$\dim_K({}^t\beta_{1X}(u), \cdots, {}^t\beta_{mX}(u)) = \sum_1^m \dim_K({}^t\beta_{iX}(u)),$$

and the surjectivity of ${}^t\beta_X$ follows from the surjectivities of the ${}^t\beta_{iX}$.