

A MODULAR MANIFOLD ASSOCIATED WITH
THE GENERALIZED KUMMER
MANIFOLD ($p = 3$)

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1. *Introduction.* The generalized Kummer p -way manifold, K_p , is determined by equating the homogeneous coordinates of a point P in S_{2p-1} to linearly independent theta functions of the second order and zero characteristic.* As the variables u in these functions change, the point $P(u)$ runs over the manifold K_p in S_{2p-1} . If the variables u be increased by a half-period π , the point $P(u)$ is transformed into the point $P(u') = P(u + \pi)$. Thus the half-periods determine a group $G_{2^{2p}}$ of birational transformations of K_p into itself. Klein and Wirtinger have shown that these birational transformations are effected on K_p by the operations of a collineation group $G_{2^{2p}}$ in S_{2p-1} under which K_p is invariant. The functions which define the position of P may be so chosen that the coefficients of the collineations of $G_{2^{2p}}$ are *numerical*. A convenient choice† is that of functions $Z_{\eta_1 \dots \eta_p}$, ($\eta_i = 0, 1$), for which the addition of a particular half-period π_{η_i}

* The reader is referred to the following sources.

E. Bertini, *Einführung in die Projektive Geometrie Mehrdimensionaler Räume*, 1924.

A. B. Coble, *An application of finite geometry to the characteristic theory of the odd and even theta functions*, Transactions of this Society, vol. 14 (1913), pp. 241–276.

A. B. Coble, *An isomorphism between theta characteristics and the $(2p+2)$ -point*, Annals of Mathematics, (2), vol. 17 (1916), pp. 101–112.

A. B. Coble, *Algebraic Geometry and Theta Functions*, Colloquium Publications of this Society, 1929.

R. W. H. T. Hudson, *Kummer's Quartic Surface*, 1905.

Felix Klein, *Theorie der Elliptischen Modulfunktionen*, 1890.

A. Krazer, *Lehrbuch der Thetafunktionen*, 1903.

F. Schottky, *Beziehungen zwischen den sechzehn Thetafunktionen von zwei Variablen*, Journal für Mathematik, vol. 105 (1889), pp. 233–249.

H. Stahl, *Theorie der Abel'schen Functionen*, 1896.

W. Wirtinger, *Über eine Verallgemeinerung der Theorie der Kummer'schen Fläche und ihrer Beziehungen zu den Thetafunktionen zweier Variablen*, Monatshefte, vol. 1 (1890).

† Coble, Colloquium, loc. cit., p. 94.