CERTAIN PERIODIC SEQUENCES OF LAPLACE OF PERIOD SIX IN ORDINARY SPACE

By S. Finikoff

If a one-to-one point correspondence is established between two surfaces (**M**), (**M′**) in ordinary space, there exists a net of lines upon each surface called a d-net whose tangents intersect the corresponding tangents of corresponding lines on the other surface. In the present paper we shall discuss the corresponding d-nets which are asymptotic on (**M**) and conjugate on (**M′**), in short a-c d-nets.

Given an arbitrary surface (**M**), there is a family of surfaces (**M′**) depending on four arbitrary functions of a variable; each surface (**M′**) is in point correspondence with (**M**) whose d-nets are asymptotic upon (**M**) and conjugate upon (**M′**). The developables of the congruence (**MM′**) correspond to the asymptotics of (**M**).

To a given surface (**M**) corresponds a family of congruences (**MM′**) depending on two arbitrary functions of one variable; each congruence is conjugate to the asymptotics of (**M**) and sustains a family of (**M′**) depending on two arbitrary functions of a variable.

Given an arbitrary surface (**M′**) there exists a family of conjugate d-nets depending on four arbitrary functions of one variable whose corresponding d-nets are asymptotic.

If the points of intersection of the corresponding tangents of two d-nets are the foci $\mathbf{M}_1$, $\mathbf{M}_2$ of conjugate tangents $\mathbf{M'M}_1$, $\mathbf{M'M}_2$, the corresponding rays $\mathbf{MM'}$, $\mathbf{M}_1\mathbf{M}_2$ are reciprocal polar lines with respect to the Darboux quadrics at the point **M** of (**M**). The d-net of (**M′**) is harmonic (see [2]). If the points $\cdots$, $\mathbf{M}_1^*$, $\mathbf{M}_2$, $\mathbf{M'}$, $\mathbf{M}_1$, $\mathbf{M}_2^*$, $\cdots$ describe the focal surfaces of the Laplace sequence with respect to the harmonic d-net of (**M′**), the points $\mathbf{M}_1^*$, $\mathbf{M}_1$ are situated on the asymptotic tangent $\mathbf{MM}_u$ of (**M**); $\mathbf{M}_2$, $\mathbf{M}_2^*$ on the asymptotic tangent $\mathbf{MM}_v$.

The above mentioned surfaces form a family depending on six arbitrary functions of one variable. To each surface (**M**) of this family there corresponds one and only one surface (**M′**), but there exists a family of surfaces (**M**) depending on four arbitrary functions of a variable such that to each surface (**M**) there correspond two surfaces (**M′**), (**M*′**).

The sequence of Laplace with respect to the d-nets of (**M′**), (**M*′**) coincide,

Received September 20, 1946.