

INVARIANT POSTULATION*

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1. *Definition.* The postulation of a given manifold, simple or multiple, on a hypersurface is the number of conditions necessary in order that the hypersurface contain the given manifold. The manifold is uniquely determined both with respect to its nature and its position in the space involved. There exist among the coefficients of the hypersurface equations equal in number to the postulation. If the position of the given manifold is not defined, the parameters associated with its general position will occur in these equations. These parameters may be eliminated from the set of equations giving rise to a certain number of invariant relations involving the coefficients of the hypersurface. These invariants express the necessary and sufficient conditions that the hypersurface contain a manifold whose nature only is defined. The number of such invariants associated with a hypersurface and a manifold of given nature will be called the invariant postulation of that manifold on the hypersurface.

If P is the postulation of a manifold ϕ on a hypersurface f in i dimensions, and q is the number of independent conditions determining the position of ϕ in i dimensions, the invariant postulation I of ϕ on f is given by the relation

$$I = P - q.$$

Algebraically, this means that q arbitraries can be eliminated from P equations in $P - q$ independent ways.

2. *Application.* The purpose of this paper is to show how certain geometric relations involving general hypersurfaces and manifolds are revealed by means of the concept defined above. Some of these relations have been found before by other methods, but most of them are new.

It is not claimed that evidence of the existence of certain relations given by this method is proof of such existence. This method, by virtue of the general expression for I , points out

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