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COMPLETENESS OF FUNDAMENTAL OBJECT OF A SURFACE WHICH DOES NOT LIE ON THE ABSOLUTE OF METRIC PROJECTIVE SPACE

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In this paper we consider a distribution of m-dimensional linear elements $\Im$ $(m < n-1)$ embedded to the metric projective space K_n with absolute Q_{n-1}. We prove that in the first order differential neighborhood the distribution $\Im$ generates a hyperband distribution H of m-dimensional linear elements [1] invariantly associated with $\Im$, and $\Im$ is basic for H. We study an m-dimensional surface V_m $(m < n-1)$ whose current point does not lie on the absolute Q_{n-1} of the metric projective space K_n. We prove that in the second order differential neighborhood of V_m there is induced a hyperband $H(V_m)$ associated with V_m, and that the fifth order fundamental object of $V_m \subset K_n$ is complete.

From now on we agree on the following index ranges:

$$\overline{I}, \overline{K}, \overline{L} = \overline{0,n}; \quad I, K, L, P, Q = \overline{1,n};$$
$$i,j,k,p,q,s,l,t = \overline{1,m}; \quad u,v,w,z,y = \overline{m+1,n-1}; \quad \alpha,\beta,\gamma = \overline{m+1,m}.$$

We denote by D the exterior differentiation, by $\wedge$ the exterior product; by $\omega^{\overline{I}}_{\overline{K}}$ and $\Omega^{\overline{I}}_{\overline{K}}$ the Pfaff forms characterizing infinitesimal motions of moving frame. The operator ∇ acts as follows:

$$\nabla K^\alpha_{in} = dK^\alpha_{in} - K^\alpha_{tn}\omega^t_i - K^\alpha_{in}\omega^n_n + K^\beta_{in}\omega^\alpha_\beta.$$

If the principal parameters are fixed, this operator is denoted by ∇_δ, the forms $\omega^{\overline{I}}_{\overline{K}}$ are denoted by $\pi^{\overline{I}}_{\overline{K}}$. The operator $\widetilde{\nabla}$ acts as follows:

$$\widetilde{\nabla} T^\alpha_{in} = dT^\alpha_{in} - T^\alpha_{tn}\Omega^t_i - T^\alpha_{in}\Omega^n_n + T^\beta_{in}\Omega^\alpha_\beta.$$

If indices are enclosed in round brackets, we assume cycling with respect to them:

$$a_{(ij)} = a_{ij} + a_{ji}.$$

1. Let us consider the n-dimensional projective space P_n referred to a moving frame $R' = \{B_{\overline{K}}\}$. The derivation equation for R' and the structure equations of projective space are as follows [2]:

$$dB_{\overline{I}} = \Omega^{\overline{L}}_{\overline{I}} B_{\overline{L}}, \qquad (1_a)$$

$$D\Omega^{\overline{I}}_{\overline{K}} = \Omega^{\overline{L}}_{\overline{K}} \wedge \Omega^{\overline{I}}_{\overline{L}}, \quad \Omega^{\overline{L}}_{\overline{L}} = 0. \qquad (1_b)$$

The metric projective space K_n is the space P_n with immovable hyperquadric Q_{n-1} (the absolute):

$$G_{\overline{I}\,\overline{K}} y^{\overline{I}} y^{\overline{K}} = 0, \quad G_{\overline{I}\,\overline{K}} = G_{\overline{K}\,\overline{I}}, \qquad (2)$$