

CLASSIFICATION OF ONE - AND BALATANTLY SURFACES OF THE TRANSFER

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Summary. It is suggested the classification, that includes the well-known types of onemodule surfaces of transfer, and also multi-module forms at using as formative and directing all possible made lines and application of key method of formation.

Key words: transfer surface, single-module and multi-module surfaces, directing and forming guides, a key way, the classification.

Raising of problem. Use of edging and curvilinear forms, in particular at creation of spatial constructions in architecture and objects in a design includes development of their geometrical researches, search of new methods of formation, study of properties of forms and accordances to the necessities of application domain. In this process important is a problem of classification on the generalized basis, that can overcome more wide circle of geometrical forms.

Analysis of the last researches and publications. Formation and description of surfaces of transfer of flat and spatial formative and directing related to the stowage of coordination of competitive points of lines in relation to the horizontal plane of basis Π_1 . In previous author's work [1, fig.5,6] it is shown that the constituents of z' and z'' of total coordination of z points of surfaces of transfer Φ form two surfaces of transfer Φ' and Φ'' . A surface Φ' arises up at the transfer of formative m in parallel to the ichnography of n 1 of directing of n and is the spatial chart of z' . Like a surface, Φ'' shows by itself the spatial chart of constituents of z'' . The key method of reception of surface Φ offers on this basis. At the movement of formative on directing key a surface Φ'' , acts part that converts Φ' into Φ . At the movement of directing on formative key a surface Φ' , acts part that converts Φ'' into Φ . It can be used for classification of surfaces of transfer.

Next publication [2, fig.1-5] opens possibility of creation and classifications of multimodule surfaces, that have the made datum lines with links as segments of lines and arcs of flat and spatial curves, or their combinations bound inter se in tops in number of different ways. The method of slanting transfer offers here, reasonable necessity and possibility of change of orientation due to the change of position of plane of basis and direction of accordance of competitive points in relation to this plane.

Formulation of aims of the article. To work out the classification of surfaces of transfer, that includes the well-known and offer types of

onemodule surfaces of transfer, and also multi-module surfaces at using as formative and directing all possible types of the made lines, application of key method of formation and variable orientation.

Basic part. The kinematics method of formation of surfaces of transfer envisages the task of determinant and type of his motion. Basis of determinant: datum lines (formative m and directing of n) that have a general point. But also at the movement form two families of congruent lines. Movement of transfer of formative m at moving point And on directing of n or directing of m point And on formative n forward without the rotation of line that moves.

Within the framework of model of Gaspara Monge [3] the surfaces of transfer of arbitrary spatial curve of m turn out on the arbitrary spatial directing of n during an ortogonal orientation in relation to the horizontal plane of Π_1 . A surface Φ' is the surface of transfer of horizontals congruent to the ichnography of n_1 of directing of n . A surface Φ'' is the surface of transfer of horizontals congruent to the ichnography of m_1 formative m . A surface Φ has two families Σm_i and Σn_i i congruent formative and directing. The got surface is examined as cut off, limited to the pair of formative and pair of directing that will name the module. In order that the existent types of surfaces of transfer can be entered as separate cases of model of Monge without the change of her essence and to get new kinds, it is needed to plug in the list of formative and directing as the spatial and flat crooked lines straight lines and to envisage application of variable orientations. Then it will be possible to elect any planes as planes of bases and rectangular or oblique-angled in direction p accordance of competitive points of formative and pair of directing.

The marked changes allow to examine the cylindrical surfaces of transfer to set direction as form the pairs of datum lines a line is a flat curve, a line is a spatial curve at arbitrary direction of orientation, to parallel direction of base line and presence of two families of congruent lines: families of formative and families of sending to the cylindrical surface. About accordance of model of Monge it is possible to say and at the surfaces of diagonal transfer after determination of ridge directly of directing and passing to the base pair of lines, about the surfaces of direct and slanting transfer (of find [1] and resources in it [1 – 3,6]).

Let see the consider bases of classification of one-module surfaces of transfer on the basis of general model of Monge. On the classes of orientation of surface it is possible to divide into the surfaces of rectangular and oblique-angled accordance in relation to the planes of basis. These planes can occupy in rectangular or in the oblique-angled system of coordinates different positions: common, parallel to the co-ordinate planes, parallel one of axes.

The pairs of datum lines appear combination for two spatial lines, flat lines and lines. On the projection of formative and directing in direction of p the nets of Chebysheva, the type of that depends on datum lines and terms of orientations, appear on a plane to basis of Π_1 .

Following the degree of classification is conducted on the types of nets. Information about them is erected in a table 1. In it next denotations are used: m and n – to space generatrix and directing; $m \in \alpha$ and $n \in \beta$ – are flat curves in planes α and β ; m_0 and n_0 – are lines generatrix and directing; $m_1 \wedge m$ i $n_1 \wedge n$ – is family accordance between datum lines and their projections on Π_1 in direction of p , enen if α and β not parallel p . The terms $\alpha \parallel p$ and $\beta \parallel p$ mean that flat curves of m and n in direction of p represented by the lines of m_1 and n_1 . In a table are included 10 types of nets. Six nets that arise up at the movement of directing on formative not included, because they will repeat the types of nets 2, 4-7, 9. Kinds 1, 3, 8, 10 with the pairs of same lines do not change the type of nets. For every type of nets are indicated corresponding surfaces in Φ' and Φ'' .

Table 1

Classification of one-module surfaces of transfer

№	A base pair	Types of net	Surface Φ' and Φ''
1	Spatial m Spatial n	Curvilinear gen. type m_1 and n_1 without special.	Φ' and Φ'' surfaces of horizontals through m and n congruent m_1 and n_1
2	Spatial m Flat $n \in \beta, \beta \nparallel p$	Curvilinear m_1 without special. $n_1 \wedge n$	Φ' - surfaces of horizontals through n_1 , familiar n Φ'' - surfaces of horizontals through m_1

Table continuation 1

3	Flat $m \in \alpha$, $\alpha \nparallel p$ Flat $m \in \beta$, $\beta \nparallel p$	Curvilinear $m_1 \wedge m$ $n_1 \wedge n$	Φ' - surfaces of congruent horizontals through n_1 , familiar n Φ'' - surfaces of congruent horizontals through m_1 , familiar m
4	Spatial m Flat $n \in \beta$, $\beta \parallel p$	Curvilinear- straight m_1 - without special. n_1 - straight	Φ' - horizontal cylindrical surfaces through m , generating $\parallel n_1$ Φ'' - surfaces of horizontals through n_1 congruent m_1
5	Flat $m \in \alpha, \alpha \nparallel p$ Flat $n \in \beta$, $\beta \parallel p$	Curvilinear- straight $m_1 \wedge m$ n_1 - straight	Φ' - horizontal cylindrical surfaces through m , generating $\parallel n_1$ Φ'' - surface of horizontals through n , congruent m_1 familiar m
6	Spatial m Straight n_o	Curvilinear- straight m_1 - without special. n_1 - straight	Φ' - horizontal cylindrical surfaces through m , generating $\parallel n_1$ Φ'' - inclined cylindrical surface of horizontals through the straight n with horizontals, congruent m_1
7	Flat $m \in \alpha$, $\alpha \nparallel p$ Straight n_o	Curvilinear- straight $m_1 \wedge m$ n_1 - straight	Φ' - horizontal cylindrical surfaces through m , generating $\parallel n_1$ Φ'' - surface through the straight n with horizontals, congruent m_1
8	Flat $m \in \alpha$, $\alpha \parallel p$ Flat $m \in \beta$, $\beta \parallel p$	Straight m_1 - straight n_1 - straight	Φ' - horizontal cylindrical surfaces through m , generating $\parallel n_1$ Φ'' - horizontal cylindrical surfaces through n , straight parallel m_1
9	Flat $m \in \alpha$, $\alpha \nparallel p$ Straight n_o	Straight m_1 - straight n_1 - straight	Φ' - horizontal cylindrical surfaces through m , generating $\parallel n_1$ Φ'' - plane through straight n with horizontals, $\parallel m_1$

10	Straight m_o Straight n_o	Straight m_1 - straight n_1 - straight	Φ' - plane through m with horizontals $\parallel n_1$ Φ'' - plane through n with horizontals, $\parallel m_1$
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Conclusions. The brought classification over of surfaces of transfer stipulates wide possibility of its working out in detail and filling with certain decisions taking into account the terms of formation in the applied industries. Here are not only tasks of search of spatial objects of constructions or design objects. The presence of families of congruent lines can be used in an engineer, technology of making of the standardized wares, study of trajectory lines and surfaces, search of forms that on the basis of beating back form the streams of batted beams in the solar radiation engineering and radiation light, architectural acoustics, and also application in underground architecture.

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