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Paper Authors

Mahmudov Masud Sheralievich, Akhmedov Yunus Hamidovich

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USE OF E⁴ SPACE IN DESCRIBING A GRAPH-ANALYTICAL REPRESENTATION OF MULTI-FACTOR EVENTS AND PROCESSES.

[1]Mahmudov Masud Sheralievich, [2]Akhmedov Yunus Hamidovich
[1]doctoral student, Bukhara Institute of Engineering Technology, Uzbekistan, Bukhara
[2]Candidate of Technical Sciences, Associate Professor, Bukhara Institute of Engineering Technology, Uzbekistan, Bukhara

Annotation: The article discusses the grapho-analytical properties of straight lines in a special case applied in three-dimensional space in order to automatically linearize the plastic function used in the design of shell surfaces.

Keywords: Hypersirt, polyhedron, linearity, plastic function, internal and external approximations, special cases of straight line, bisector plane.

In the next decade of development of science and technology in the field of construction will be rapidly developing the construction of shells, building structures from wall materials, composite materials and a number of similar materials. It remains an open problem to describe the newly developed graphic-analytical images of all polysmaterials as multifactorial phenomena and processes, or rather not developed from this point of view at this time.

If we analyze multifactorial 2 events and processes from a geometric point of view, the basic geometrical concepts as a geometric object, according to tradition, should be considered in three, four-dimensional space, such as point, straight line. As an example, let us consider the problem of calculating the load-bearing capacity of a shell surface. If we want to double-evaluate the ability of ideal rigid plastic structures to withstand loads by static and kinematic methods, it naturally arises that in the classical form this problem depends on many argumentative functions under plastic conditions. (Figure 1).

$$F(N_x, N_y, N_{xy}, M_x, M_y, M_{xy}) \leq K \quad (1)$$

In the natural way, the verification of such a multi-argument function can be done using geometric modeling.It is noteworthy that such geometric modeling is often performed in multidimensional space.

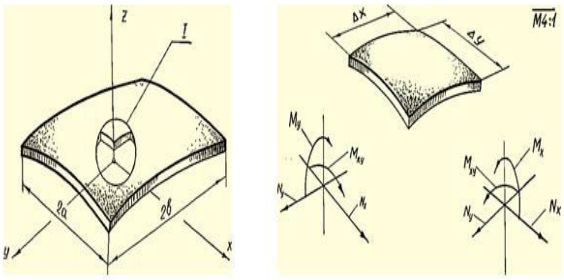

Figure 1.

The plasticity condition is in most cases a six-dimensional space for the shell surface $N_{i,j}; M_{i,j}$ consists of internal influencing forces.In addition, in general, the F function represents a closed, convex second-order hypersurface. Since the function F is convex, the calculation of the load-bearing capacity of the shell leads to the solution of nonlinear problems.

The design of structures, composites, especially structures, depends on their optimization. Given the ability to carry loads in terms of practice in many optimization issues [1], the construction of the structure at

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low cost remains one of the requirements of the time.

Putting the problem in such a way has led to the repeated solution of the problem of boundary flow equilibrium. Therefore, the algorithm for calculating the load-bearing capacity of the shell surface is required to calculate the speed in the short term.

One of the most effective quick ways to solve this problem can be to linearize a given problem, which in turn can lead to better results using linear programming. [2,3,4, ... 5].

To replace such a liner with a nonlinear convex hyperlink, it is necessary to replace the nonlinear convex hyperlink with an internally or externally drawn hyperlink (polyhedron).

It is known that the evaluation of the plastic surface, the formation or [6,7,8, ... 9] is between the evaluation of internal and external approximations. Therefore, in the geometric interpretation of the problem it is necessary to find a polyester that gives a clear answer to the problem. .

One of the ways to solve problems is to sample the hypersites in order to linearize the nonlinear surface. Hypersurpets are discretized in order to linearize the nonlinear surface.

Thus, it is an important step to depict basic geometric basic shapes in a multidimensional space and to describe its particular points in particular, in order to line nonlinear hypersurpets.

Therefore, the classification for the special cases of a straight line, the corresponding diagrams of which are given below.

The given table describes the special cases of a straight line in terms of components.

(AB)=a straight line V⊥ H ⊥ W The following cases may occur if given in the system.

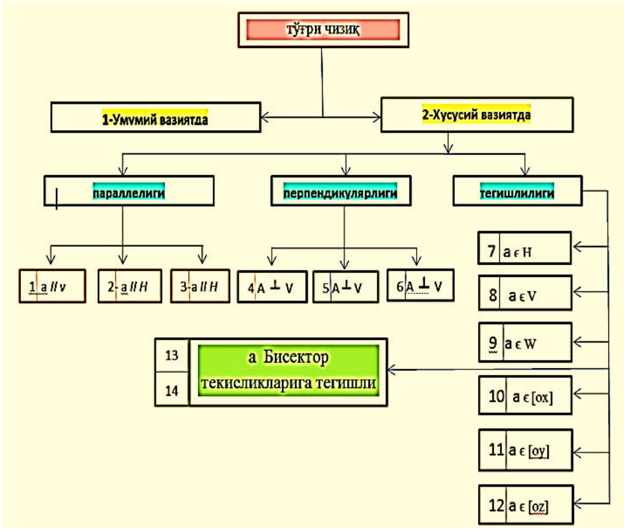

Figure 2.

Hence, the section of a straight line a has 14 different positions with respect to the axes V, H, W, OX, OY, OZ and the bisector planes. In the design, the remaining 11 situations are more common in the orthogonal projection of the details.

Therefore, we emphasize the desirability of describing their epyurs. We show a clear description and epyur of them. The classification of these cases is used in the following cases.

a) in solving practical problems

b) In determining the condition of the edges of a detail

c) In this area, especially in solving graphic analytical problems

c) In solving metric, positional problems

d) It is extremely necessary in the conduct of scientific research

The following set of points is given to reveal the properties of the coordinates of 2 points on a straight line to express in practice the compatibility of text and diagrams. It is known that a single straight line passes through 2 points.

Issue: Two points A(X_A ; Y_A ; Z_A), B(X_B ; Y_B ; Z_B) the graph-analytical properties of the above classification, if given by the coordinates.

Parallelism

Xossa.1. $[X_A] \neq [X_B]$, $[Y_A] \neq [Y_B]$, $[Z_A] \neq [Z_B]$ in the general case [***AB***] *II* ***H*** and $a^I b^I$ *II ox ;* [*a b*] = [*AB*] will be.

Xossa.2. *AB II V if* $[X_A] \neq [X_B]$, $[Y_A] \neq [Y_B]$, $[Z_A] \neq [Z_B]$

Xossa.3. *AB II W if* .$[X_A] \neq [X_B]$, $[Y_A] \neq [Y_B]$, $[Z_A] \neq [Z_B]$

Perpendicularity

Xossa.4. *(AB)* $\perp$ *H if,* $[X_A] \neq [X_B]$, $[Y_A] \neq [Y_B]$, $[Z_A] \neq [Z_B]$

Xossa.5. *(AB) II V if ,* $[X_A] \neq [X_B]$, $[Y_A] \neq [Y_B]$, $[Z_A] \neq [Z_B]$

Xossa.6. *(AB) II W if ,* $[X_A] \neq [X_B]$, $[Y_A] \neq [Y_B]$, $[Z_A] \neq [Z_B]$

Appropriateness

Xossa.7. $a \in$ [***ox***) *if* . $X_A \neq X_B = 0; Y_A \neq Y_B = 0; Z_A \neq Z_B = 0$

Xossa.8. $a \in$ [***oy***) *if* . $X_A \neq X_B = 0; Y_A \neq Y_B = 0; Z_A \neq Z_B = 0$

Xossa.9. $a \in$ [***oz***) *if* . $X_A \neq X_B = 0; Y_A \neq Y_B = 0; Z_A \neq Z_B = 0$

Xossa.10. $[X_A] = [Y_A] = [Z_A]$, $[X_B] = [Y_B] = [Z_B]$

It belongs to the bisector plane

Xossa.11. $X_A = Y_A = Z_A = X_B = Y_B = Z_B = 0$ *if [AB]* becomes a point and this is the coordinate $Z_B = Z_B$ represents the head.

Xossa 12. $X_A = Y_A = Z_A, = 0$ $X_B \to \infty$ *[ox) read*

Xossa.13. $X_A = Y_A = Z_A = X_B = Y_B = Z_B = 0$ $Z_B \to \infty$ *[oz) read*

Xossa.14. $X_A = Y_A = Z_A = Z_B = Z_A = 0$ $Z_B \to \infty$ *[oy) read*

Thus, the study of all the special cases of a straight line intersection leads to the thorough and conscious mastery of the following knowledge by students:

1) In the projection planes of the edges of the detail, ie the plane of horizontal projections relative to the frontal profile, the parallelism, perpendicularity and the corresponding orthogonal projections.

2) To be able to quickly and accurately determine the location of details in V, H, W;

3) The growth of their spatial imagination leads to the effective use of geometric constructions in the construction of axonometric projections.

4) In the future it is planned to conduct time-based graphometry on graphic work performed with and without use in the cases specified in the examination of students' knowledge.

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