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THE NOTATION OF MECHANISM STRUCTURE IN STRUCTURAL RESEARCHES

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Structure of Mechanisms is a part of Mechanism and Machine Theory which defines, organizes and classifies basic terms of this scientific discipline. Among introduced terms there are: mechanism, machine, Assur group, link, joints.

To the subject of this part belong various means of notation of mechanical structure. One of the most detailed means is the construction drawing. A mechanism is shown in the given scale by using different means of three-dimensional objects notations on the drawing space, known from the descriptive geometry, such as Monge'a and axonometric projections. Based on requirements of studies dedicated to analysis and structural synthesis a simplified mechanism notation has been introduced which is structural scheme. According to this notation links and joints are presented in a symbolic way. The next simplified kind of structure notation is kinematic scheme. In this scheme there are given geometrical values identifying location of the driven links depending on the motion of driving links. Other means of mechanism structure notation, which are used in structural analysis, are structural graphs, adjacency matrix, loop notation.

For the last several years, due to both ongoing studies of structure isomorphism and identifying rigid and over-rigid chains in their structure, researchers have been using various types of graphs: perimeter, canonical perimeter, contracted. Most of these studies are dedicated to the planar mechanisms, which contain two fundamental types of joints: revolute and prismatic. There has been introduced author's mean of spatial mechanism structure notation, in which joints classes are noted as labels next to the structural scheme. This kind of notation enables analysis of isomorphism of spatial mechanisms by using methods formulated for planar mechanisms.