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# Contact Mechanical Analysis of Elastic Multibody Structures

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The theory of elastic multibody structures with dry joints is based on the mechanics of elastic voussoirs in mutual contact with Coulomb's friction. The state of deformation of the structure is split up into that of the corresponding monolithic elastic structure, and, that of a rigid body assemblage with linearly distributed longitudinal gap with partial interpenetration in the compressed contact area and constant slip between the rigid blocks. The gap and slip can be expressed by the mutual translations, axial and transverse, and rotation between the adjacents blocks. Provided that the joint can be considered as a plane of symmetry, axial translation and rotation are proportional to normal force N and depend on the eccentricity of N, whereas transverse translation depends also on shear force Q. With this assumption and some generalizations, deformation parameters for different forms of blocks are worked out and an elastic theory of voussoir arches and segmental beams is developed.

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