Mathematical modeling of mechanical systems with many degrees of freedom

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Article developed the methodology of mathematical modelling of mechanical systems with many degrees of freedom, based on the fundamental principles of classical Lagrangian mechanics and mathematical models in the form of Lagrange's equations of the second kind, converted to a dynamical system in the form of Jacoby. Under this method, the system received Jacoby-descent model axisymmetric load and a parachute in the Earth's atmosphere, using the potential flow in chute filled. For the model in the form of a hinge ligament two solid bodies with nine degrees of freedom are the expression of kinetic and generalized forces. An algorithmization is offered further stages of research with the use of multistep extrapolation method of Adams for integration of the system Jacobi and numeral differentiation of kinetic potential to on to the generalized co-ordinates. The calculable come into question and methodical errors of result of numeral differentiations. A review is given works on issue of regulyarizacii algorithms of numeral differentiation.

Keywords: mathematical modeling, parachute system, Lagrange's equations, numerical integration and differentiation.

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