

Estimation of the Recoverably from Discrete Presented Continuous Dependence

There is discussed the recovery conditions of continuous mapping from a discrete representation. The mapping is presented in a network of model elements located on a differentiable manifold.

Motivation for this material: a.) The applied models in geomechanics are characterized by large errors of the parameters and uncertainty in results. However, these models are presented by continuous dependencies. b.) The uncertainty principle is a fundamental concept in the context of signal and image processing. Uncertainty principles can be derived by using a group theoretic approach. This approach yields also the formalism in terms of continuous groups.

Homogeneous groups of symmetry: The method for valuation of dependencies is applied similar to "functional stability analysis" method, which is for to detect instability in numerical algorithms. This method has several key definitions. In the common theory of sensibility for computing problems are used valuations for precision. For optimal evaluation of the dependencies between physical values represented by differentiable manifold, the homogeneous groups of symmetry are used.

Application: The main links between the technical values existed because of the same basic physical values (M -mass, L -path and T -time) in their corresponding structural formulas. These relationships are expressed with the corresponding homogeneous groups of symmetry and invariants. Application is made for evaluation of the analytical expressions in a geomechanical model.

Primary author: Dr DIMITROV, Julian (Employer: University of Mining and Geology, Sofia, Bulgaria; Position: Chief assistant professor)

Presenter: Dr DIMITROV, Julian (Employer: University of Mining and Geology, Sofia, Bulgaria; Position: Chief assistant professor)