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Regular Session:

Speaker: Vsevolod Vladimirov (AGH University of Science and Technology, Poland)

Title: *Soliton-like solutions supported by refined hydrodynamic-type model of an elastic medium with soft inclusions*

Abstract: A modified model of nonlinear elastic medium containing sharp inhomogeneities is considered. The modification consists in introducing into the dynamic equation of state those terms that were discarded in the previously considered models. The main purpose of the ongoing research is to analyze the existence, stability and dynamic properties of soliton-like solutions. It is shown that, under certain restrictions, the modified model describes the solitary waves of compression and rarefaction, that is, among its solutions there are the same wave structures as in the previously considered model. However, this is where the coincidence of the properties ends, since it is strictly proved within the previously considered model, that only solitary waves of rarefaction are spectrally stable.

The results of current research show that the solitary waves of rarefaction supported by the modified model are stable. At the same time, previously unstable solitary waves of compression acquire the stability due to the incorporation of the higher order terms of the asymptotic expansion into the dynamic equation of state.