

On refined plate models based on kinematical assumptions, T. Lewiński, Warsaw

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In the first part of the paper an energy-consistent model for thick, elastic, isotropic plates based upon Jemielita's kinematical hypothesis is proposed. Since no assumptions on stresses are stipulated the model is free of the usual discrepancy between stress and displacement fields, viz. no one of the constitutive equations being violated. The objective of the second part of the paper is to perform a passage from the model obtained to the simplified one which is energy-inconsistent. This latter model proves far-reaching similarities to the first Reissner theory and, on the other hand, when an appropriate change of the function standing for the averaged plate deflection is made, — to the Kelkel's considerations.