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SPECIAL EFFECTS OF BOUNDARY CONDITIONS ON DISTRIBUTION OF ELASTIC-VISCOUS-PLASTIC WAVES INTO BARS MADE FROM DELAYED FLUIDITY MATERIAL

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Based on an electromechanical model of an ideal elastic-viscous-plastic material with delayed fluidity, the propagation of elastic-viscous-plastic waves through a semi-infinite bar is considered. The problem is solved in the statement when an impact on the end of an unloaded bar imparts a constant velocity to an end section. From the solution of the equations of the dynamic material behavior behind the front wave of delayed fluidity, the material stressed-strained state is measured. In comparison with a limited condition, when a constant force is suddenly applied to the end surface, the behavior of a disturbed region of the bar is specially featured. The possibility of occurring a singular solution of the determining equations with the special features in the form of discontinuity points of the first kind is demonstrated. Such solution describes a strange behavior of the material, the step-by-step motion resembling that in trembling.

Keywords: *plastic state, dynamic criterion of plasticity, impact loading, elastic-viscous-plastic wave, delayed fluidity, medium trembling.*

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