Simulation of creep process structural materials

© V.M. Dubrovin, T.A. Butina,

Bauman Moscow State Technical University, Moscow, 105005, Russia

Construction material is considered as a combination of elastic and plasticity elements connected in a certain way. Based on the analysis of various models of elastoplastic deformation of a structural material in long-term loading was chosen three-element model, for which the proposed law, which describes the dependence of the creep strain rate of the loading time. As an example, the creep of aluminum-magnesium alloy.

Keywords: material creep, elastic element, plastic element, three element model, elastic-plastic deformation.

Dubrovin V.M. (b. 1935) graduated from the Faculty of Mathematics and Mechanics Saratov State University in 1958. Ph.D., Assoc. Professor of the Computational Mathematics and Mathematical Physics and of the Higher Mathematics Departments of Bauman Moscow State Technical University. Specialist in the field of strength, stability of deformable systems. Research interests: dynamics of strength and stability of deformable systems; creep of structural materials. e-mail: vmdubrovin@mail.ru

Butina T.A. (b. 1950) graduated from the Faculty of Management and Applied Mathematics of the Moscow Institute of Physics and Technology in 1974. Ph.D., Assoc. Professor of the Computational Mathematics and Mathematical Physics Department of Bauman Moscow State Technical University. A specialist in the field of strength and stability of deformable systems. e-mail: butina_ta@mail.ru