

SIMULATION OF HEAT TRANSFER AND ELECTORRHEOLOGICAL FLUID DYNAMICS IN THE CONTROLLABLE TWO-RING SHOCK- ABSORBER

V.A. Bilyk, S.A. Gubarev

A.V.Luikov Heat and Mass Transfer Institute, National Academy of Sciences, Minsk, Belarus

sergey_gubarev@yahoo.com

In this work a mathematical model of an electrorheological fluid dynamics and heat exchange in two-ring controllable shock-absorber has been developed. The influence of applied electric field and temperature on rheological properties of viscoplastic electrorheological fluid has been taken into account. The error of the model has been estimated by comparing the calculated temperature on the surface of the shock-absorber with the experimental one and it was less than 15 %. The temperature mode of the two-ring shock-absorber under its harmonic loading (frequency from 0.5 to 10 Hz, amplitude from 5 to 30 mm, intensity of electric field from 0 to 2.5 kV/mm) has been shown.