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15, 49005, ; e-mail: Mokrii.T.F@nas.gov.ua

18-100

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18-100

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The study purpose was to evaluate the effects of the parameters of a horizontal rigidity of elastic adapters in axle box openings of the side frames on the dynamic qualities of the open car with complexly retrofitted bogies. Methods for mathematical modeling and computer simulation, the theory of oscillation have been employed.

The paper proposes a design version of an elastic adapter for mounting with cassette bearings in axle box openings of the side frames of complexly retrofitted bogies of the 18-100 type instead of the standard axle boxes.

The effects of the parameters of a horizontal rigidity of the elastic adapter on the stable and dynamic indices of the freight car (considering the wheel wear) at running in loaded and empty states at various speed on track with the random irregularities are evaluated. From the results of computations, the rational values of the horizontal longitudinal and transverse components of the adapter rigidity are chosen.

Elastic adapters with the chosen parameters for coupling the side frames and the wheelsets of complexly retrofitted bogies of the 18-100 type can lower the levels of impacts on the side frames, as well as the intensity of their wear in the zone of axle box openings. In so doing, running the open car on straight track at speed up to 120 km/h inclusive would be stable, no matter what the wear degree of wheels. Values of its horizontal dynamic indices will not exceed fundamentally the permissible standard levels.

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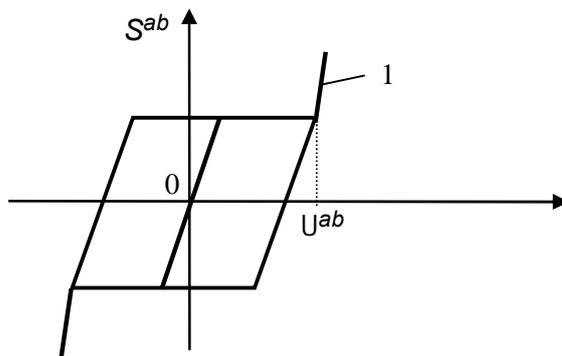
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2004 . (18-100) -
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 40) / , : (20 -
 (4 - 5) , (2,5 - 3) , -
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 24000 . -
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 . 18-100
 [2]. , ,
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 1520 [3]. [4].
 Amsted (), SKF (), Timken (). -
 (8 - 10 800 - 1200 .), -
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 (60).

S^{ab} ,

, U^{ab} .3, 1 -



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, -
-
Kx -

K -

(\ddot{y} -

o) g H_p V 60 120 / -

« » . -

(K_x K 27). ,

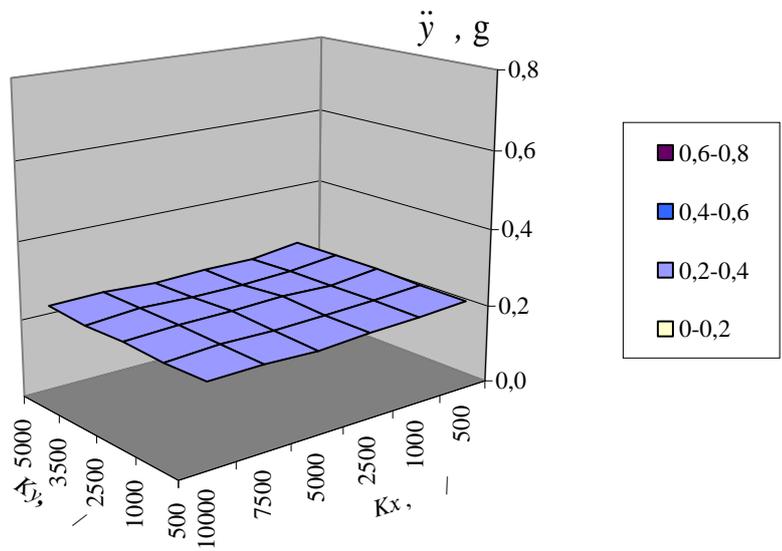
(500 - 10000) / . K_z

20000 / .

, (60 - 100) / -
 K_x K_y .

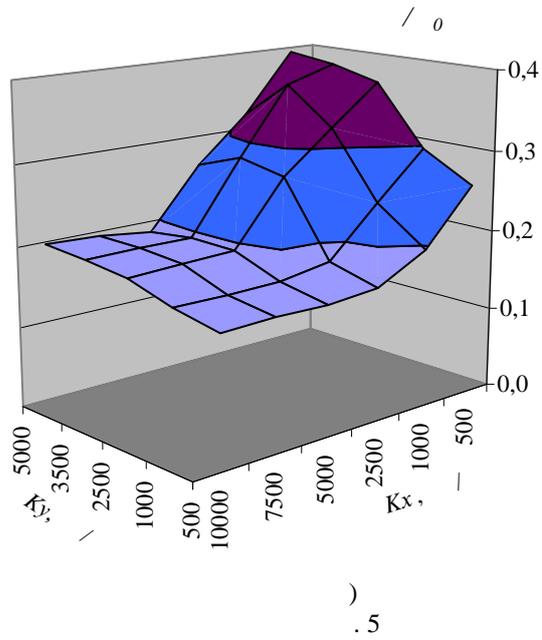
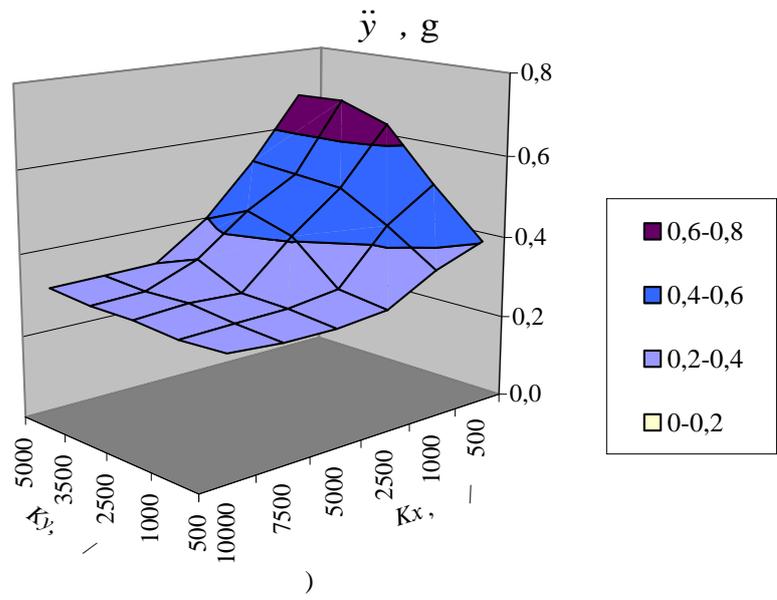
.4 \ddot{y} -
-
 K_x, K_y -

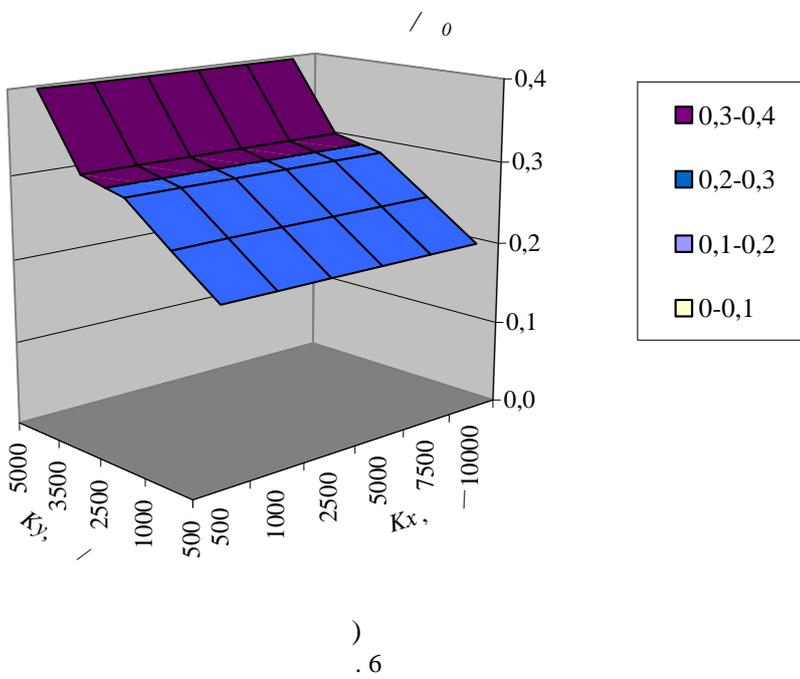
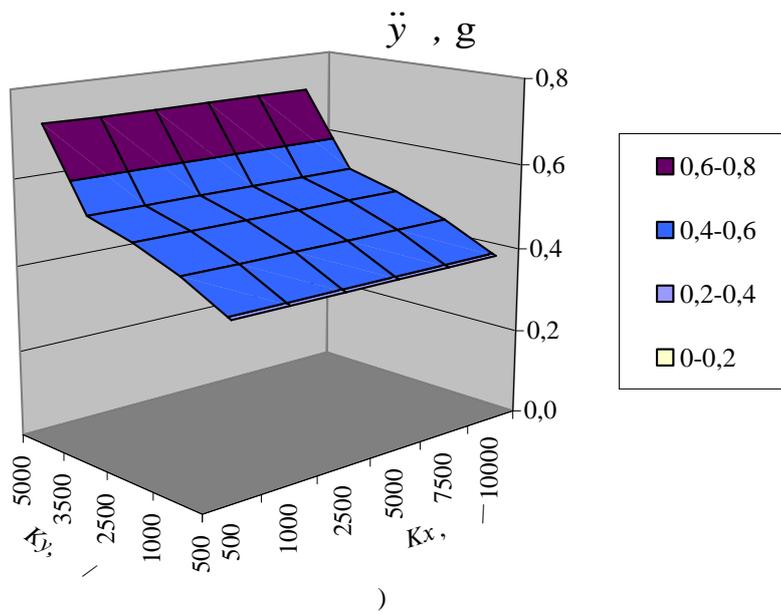
$V = 100$ / .

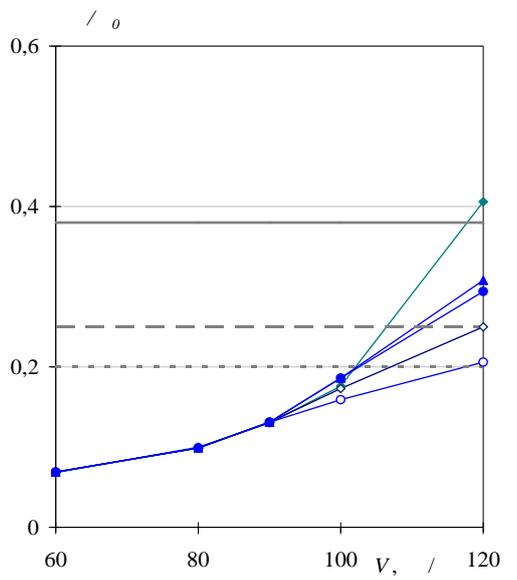
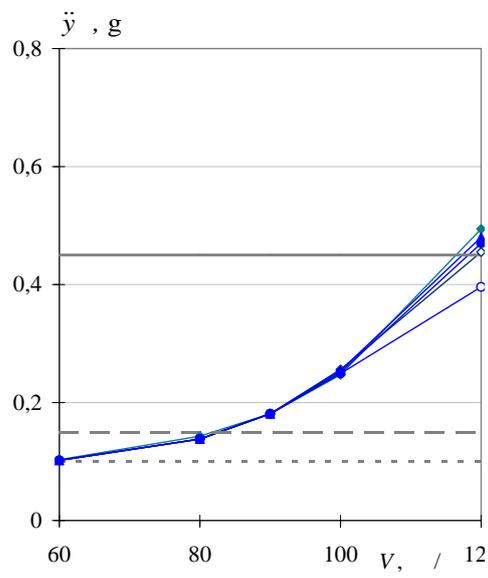
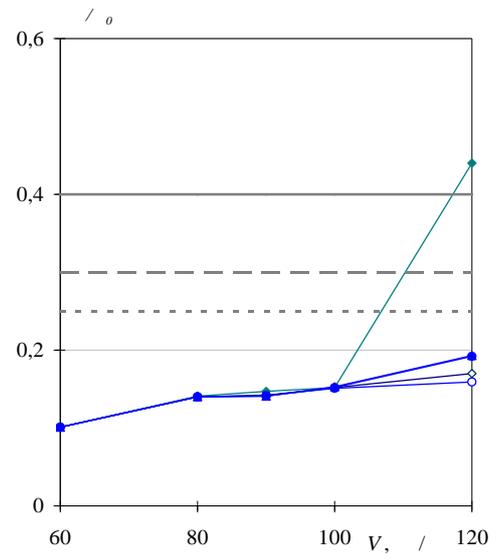
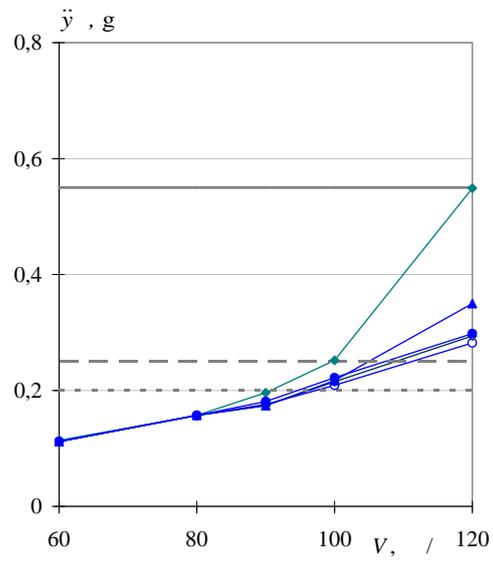


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$V = 120$ / \ddot{y} (. 5,), H_p / o (. 5,)
 $K_x > 5000$ / K ,
 $K_x < 5000$ /
 , K_x K .
 (. 6)
 K_x , K
 $K_y > 3500$ / .
 ,
 .
 (60 - 120) /
 5000 / , - 3500 / .
 -
 ($K_x > 5000$ / $K_y > 3500$ /) K_x K
 . K_x
 \ddot{y} , H_p / o ,
 5000 / .
 , K_y : 500, 1000,
 2500, 3500 / .
 .
 . 7,), - . 7,).

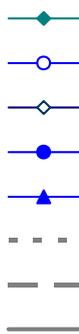






)

)



500 /
 1000 /
 2500 /
 3500 /
 " "
 " "
 " "

.7

« » , $H_p/ o -$ -
 120 / « -
 » . -
 K_y \ddot{y} 35 % $K_y = 3500$ / $(45 - 48) \%$, -
 $(500 - 2500)$ / . -
 \ddot{y} -
 « $K_y > 1000$ / (10 %) , -
 » . -
 , . -
 $H_p/ o: (2,3 - 2,8)$ -
 (1,3 - 2,0) -
 120 / . , -
 : 3 -
 (2,2 - 3,0) , -
 , , -
 18-100 -
 K_x 5000 / , -
 $K_y -$ -
 (1000 - 2500) / , 3500 / . -
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17.10.2016,
07.12.2016