

## 2.

534.1

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 . , ,  
 [1].

: =1900 / <sup>3</sup> , =5.5·10<sup>10</sup> ,  
 =0.2, =10 %.

ANSYS,

SHELL 63.

, QR Damped,

ANSYS

(1):

$$\alpha \cdot [M] + \beta \cdot [K] = 0, \quad (1)$$

, [M] [K] -

[2].

[3]

(2):

$$\begin{aligned} \omega &= 2\pi f \\ \xi &= \frac{\delta}{\sqrt{(2\pi)^2 + \delta^2}} \\ \alpha &= 2\xi\omega \quad \beta = 2\xi/\omega \end{aligned} \quad (2)$$

f -

, ξ -

1.

1 -

(k)	( )	( )	( )	( ) 10 <sup>-4</sup>
1	179,85	-2,865	179,83	0.28193
2	184,65	-2.9415	184,63	0.27460
3	409,45	-6.5225	409,4	0.12383
4	421,86	-6.7200	421,8	0.12019
5	504,32	-8.0335	504,25	0.10054
6	566,23	-9.0199	566,16	0.08954

(3),

:

$$q_k = e^{\gamma t} (B_k \text{Cos}(\Omega t) + C_k \text{Sin}(\Omega t)), \quad (3)$$

$B_k$   $C_k$  -  
[4].

, k -

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