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Analysis of the Surface of the ARRALIOUS Double Plastic Consolidated Collector

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ABSTRACT: The article presents the results of theoretical studies of the cantilever grate with a swiveling saw gin plate. At the same time, the turning plate and the grate are considered as two mass systems, the dynamic and mathematical models of this system are obtained. Based on the numerical solution of the problem, regularities of the grate and plate oscillations were obtained, and graphical dependencies of the parameters were constructed. Based on the analysis of the results, the best parameters of the oscillatory system are recommended.

KEYWORDS: saw gin, the bar, vibration plate, radius the bar, grating the bar

I. INTRODUCTION.

The main process of the cotton processing system is criminal, ire fibrous cotton seed separation [1]. Medium-sized cotton varieties are produced in demining genus jinn.

These are the main colonies of the demons, fibers and seeds, poor working efficiency, and the rapid depletion of the machine source, especially the arrays. A number of new innovative and constructive solutions have been proposed to address these shortcomings [2]. However, the issue of intensifying the cotton fiber seedlings is still behind.

Therefore, the conceptual scheme of console columns with columns mounted on the columns was developed using a resilient rubber welding tube that accelerates the fiber removal [3,4].

II. ACCOUNTING SCHEME AND MATHEMATICAL MODEL.

The collar is seen as a two-mass vibration system. (Figure 1).The first vibrating mass console is the mass of the columns loaded in the gear body through the sliding base, the second mass is the weight of the plate mounted on the worker part of the working pad. We use the equations for the equations of the Lagrange II-order [5] to introduce the equations of the two mass systems:

$$m_k\ddot{x}_k + (в_1+в_2)\dot{x}_k - в_2\dot{x}_{pl} + (c_1 + c_2)x_k - c_2x_{pl} = 0;$$
$$m_{pl}\ddot{x}_{pl} + в_2(\dot{x}_{pl} - \dot{x}_k) + c_2\left(x_{pl} - x_k\right) = M(F_{тв}) \pm \delta(F_{тв}); \quad (1)$$

The solution resolves the solution values to the following values: $m_к$=0,81кг; $m_{пл}$=0,075кг; $c_1=(2,5\div8,0)\cdot10^3$Н/м; $c_2=(0,5\div2,0)\cdot10^3$Н/м; $в_1=(2,1\div2,3)$Нс; $в_2=(0,4\div0,9)$Нс; $M(Ғ_{тв})=(1,5\div4,0)$Н; $\delta(Ғ_{тв})=(1,5\div4,0)$ $M(Ғ_{тв})$

Here; x_k, x_{pl} -columns and linear displacement of the plate; c_1 and c_2s - reference coefficients of the convolution b ase plate and conveying pad of the plate; $в_1$, $в_2$ – - the convolution base plate and the plate slack pad emission coefficients;

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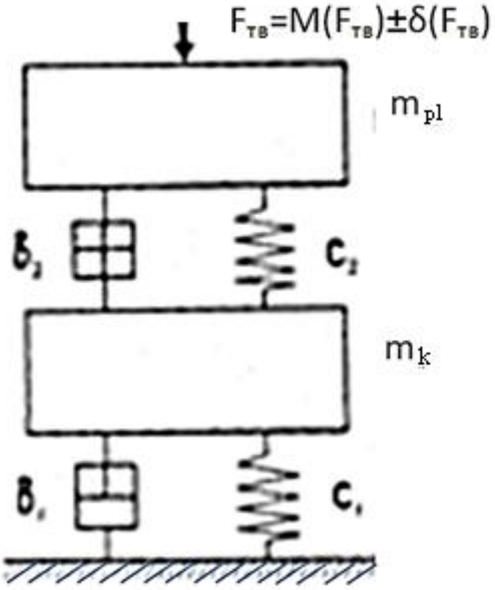


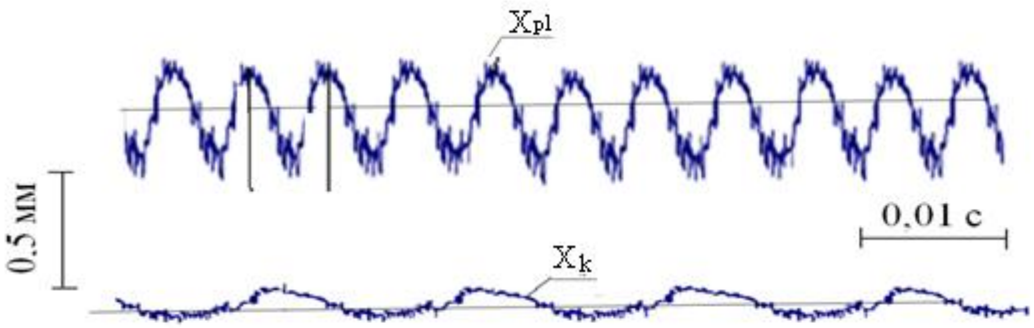
The coefficient of rigidity and dissipation of the platelet composition plate with c_1 and c_2, $в_1$ and $в_2$- arrays. here; $m_к$ - aralias go masses mass, m_{pl}-rippled plate mass.

Fig.1. The scheme of the two mass-vibrating system of saw gin console colonies

III. NUMERICAL SOLUTION AND ANALYSIS.

On the basis of the resulting solution of the Differential Equations System (1), the laws of the arrhythmic colony and plate tremor were obtained.

In particular, Colloidal and Plate vibrations are shown in Figure 2 depending on the effect of the cotton harvested. Columns and platens are likely to increase with the increase in cotton pick-up.



a

P_n=2,0 N; C_1=2,5·10^3N/m; C_2=0,4·10^3N/m

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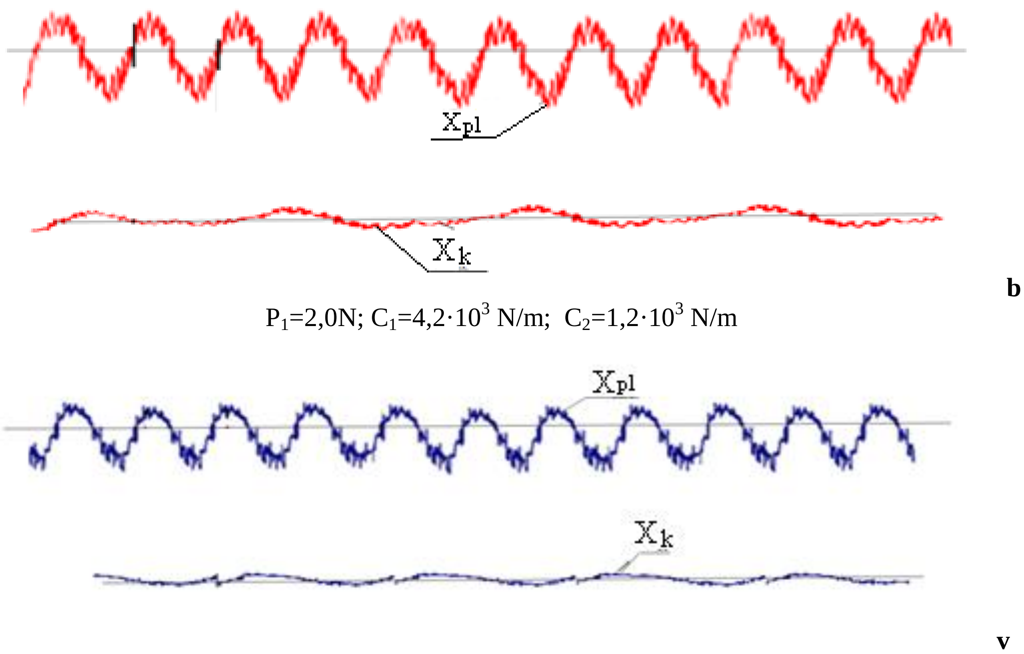

P_1=2,0N; C_1=6,6·10^3 N/m; C_2=1,9·10^3 N/m

Fig.2. Vibration of the vibration plate on the console armchair with respect to cotton fiber

For example, when the colloquial amplitude (0, 15 ÷ 0,2) mm is reached when the force of cotton is 2.0 N, the strength values of c_1= 2.5 • 103N / m and c_2=0.4 • 103N / m, plate vibration amplitude (0.35 ÷ 0.39) mm.

At the same time, the coincidental effect of cotton (5,0 ÷ 9,0) is about%. Similarly, when the rigidity brackets have rigidity coefficientsc_1= 6,6 • 103N / m and c_2= 1,9 • 103 N / m, the plunging amplitude (0.08 ÷ 0.14) mm, and the plate vibration amplitude (0,21 ÷ 0.29 mm). Hence, if the increase in the effect of cotton has increased the amplitude, the increase in the beneficial coefficients of the base would reduce the amplitude.

Colossi oscillation amplitude (0,22 ÷ 0,26) mm when colonic oscillation amplitude is increased to 3.5 N when the impact on cotton is shown in Figure 3 c_1 = 2.5 • 103N / m and c_2 = 0.4 • 103N / m (0.06 ÷ 0.11) in the range of 0.05 ÷ 0, and for the plate (0.19 ÷ 0), the base values are respectively c_1=6,6·10^3 N/m and c_2=1,9·10^3N/m , in (0,19÷0,22) mm range.

On the basis of the analysis of collar and plate vibration rules, graphs of colonic and vibration plate vibration values were calculated based on the effect of cotton.

These graphs are shown in Figure 4. Based on the analysis of graphs taken in Figure 4 and the results of the experimental studies, the coverage of the colonic vibration (0.18 ÷ 0.25) • 10-3m, the plate vibration coverage (0.9 ÷ 1.2) • 10^{-3}м effect for the 103m (4.0 ÷ 6.0) N range.

It should be noted that the supportive factors of these supporters play a crucial role. Important parameters have a significant impact on the characteristics of the vibration characteristic of the change of columns and plate masses.

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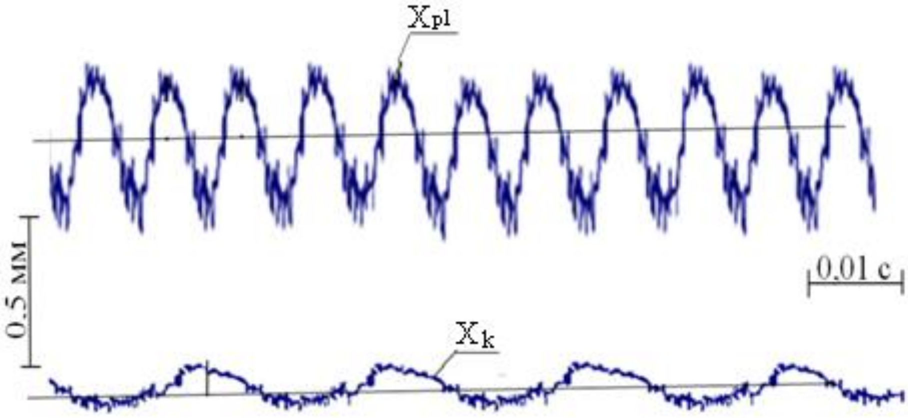
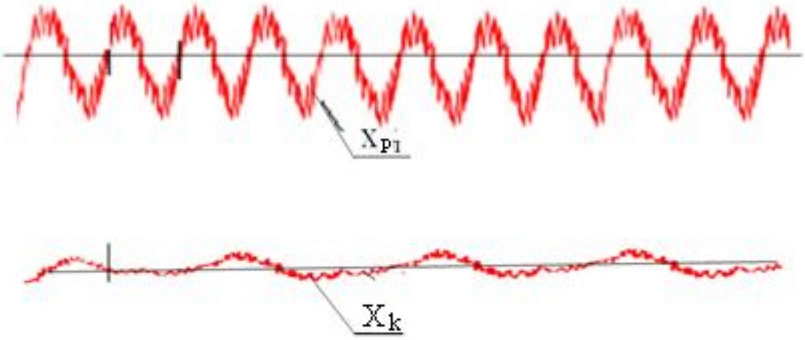


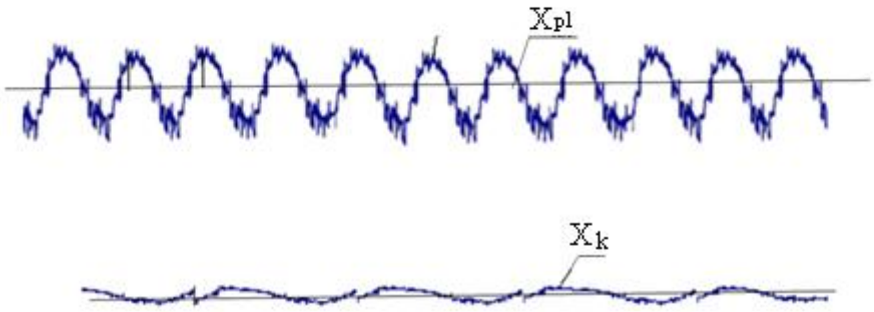
a

$P_{п}=3,5N$; $C_1=2,5\cdot10^3$ N/m; $C_2=0,4\cdot10^3$ N/m



b

$P_{п}=3,5N$; $C_1=4,2\cdot10^3$ N/m; $C_2=1,2\cdot10^3$ N/m



v

$P_{п}=3,5N$; $C_1=6,6\cdot10^3$ N/m; $C_2=1,9\cdot10^3$ N/m

Fig.3.Necessary fluctuations in column and plate.

Figure 5 shows the shape and character of the vibration of the change of columns and plate masses. For example, the strength of the cotton is 3.5 N, the mass of the support is 0.45 kg and the $m_к$=0,65kg, the amplitude of the colonic oscillation (0.21 ÷ 0.25) and the plate vibration amplitude (0, 36 ÷ 0,45) mm.

The corresponding increase in mass results in a decrease in the vibration amplitude. The shape and frequency of the vibration will also be partially varied. Columns and plate masses were reduced in the range of $m_к$=1,15kg, m_{pl} = 0.12 kg, and the plunging amplitude (0,18 ÷ 0,21) mm (0,2 ÷ 0,4) (Figure 5).

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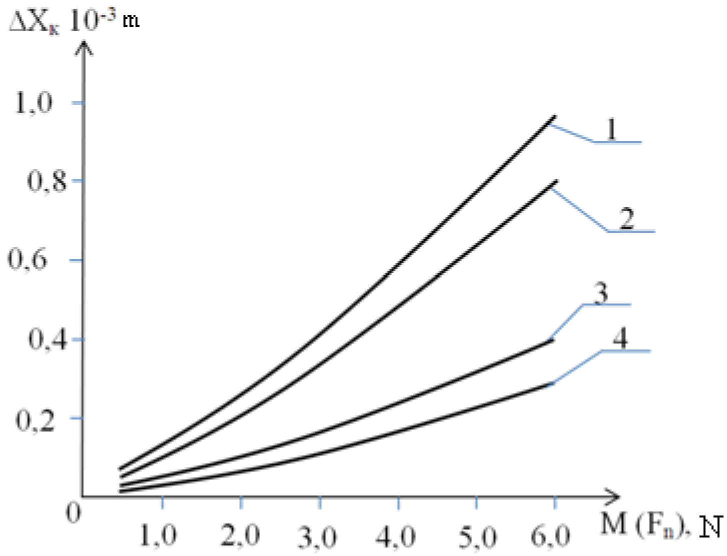
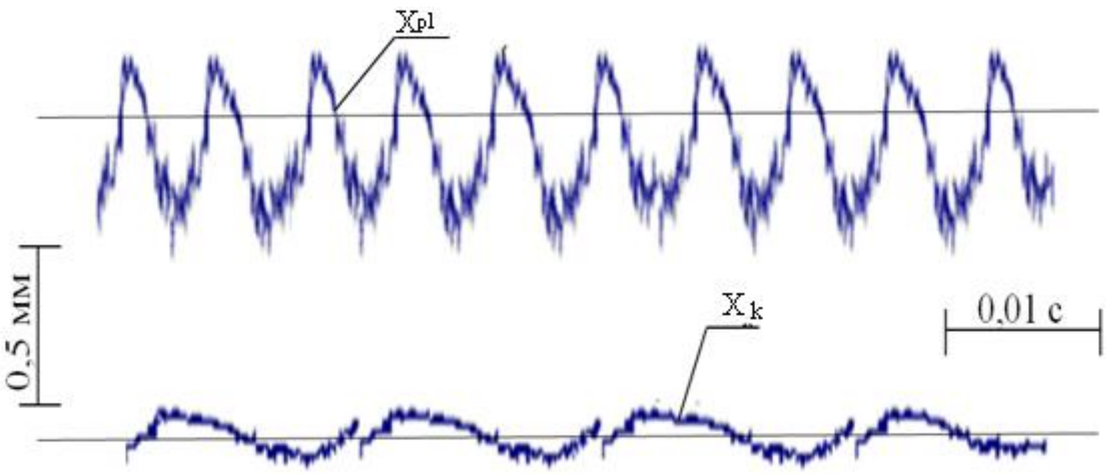


1,2-X_k; 3,4-X_{pl}; 1,3-$m_к$=0,65 кг;m_{pl}=0,05 kg;
2,4-$m_к$=1,15 кг; $m_{пл}$=0,12 кг; $\delta_к$, $\delta_{пл}$=(8,0÷10)%

Fig.4. Columns and vibration plate diagrams depend on the strength of cotton



a

P_p=3,5N; $m_к$=0,65 kg; $m_к$=0,05 kg;

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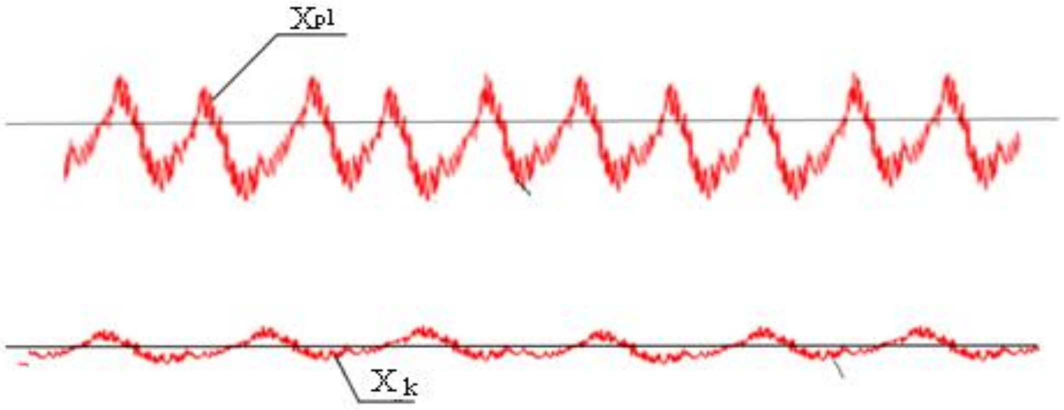
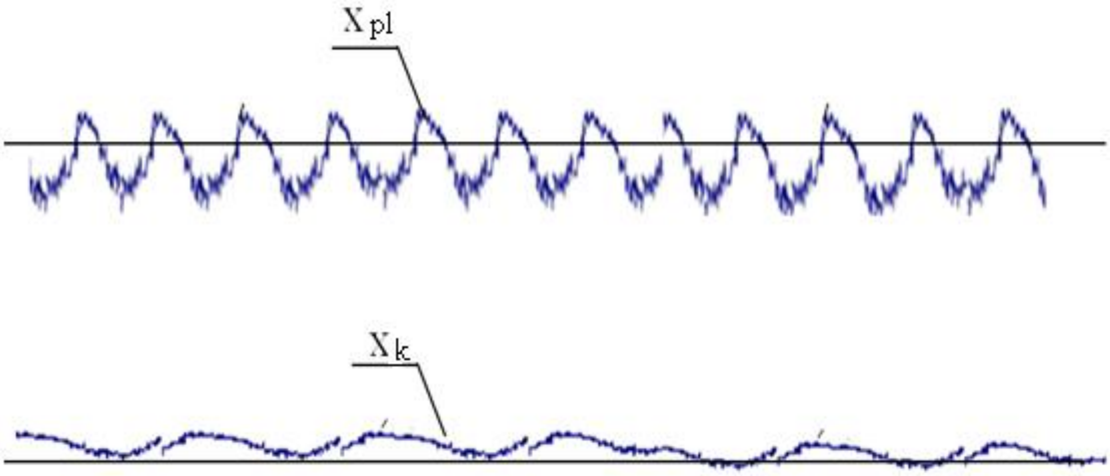


b

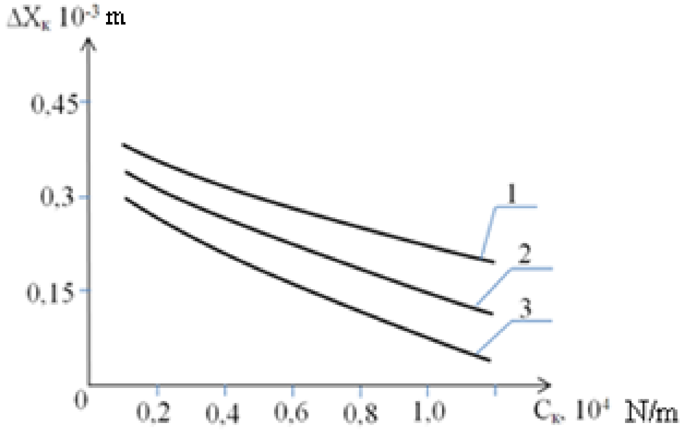
P_p=3,5 N; $m_к$=1,0 kg; $m_к$=0,09 kg;



v

$P_п$=3,5 N; $m_к$=1,15 kg; $m_к$=0,12 kg;

Fig. 5. The appearance of vibrations in the change of column and plate mass.



a) 3-M(F_n)=0,15·10 N2-M(F_n)=0,25·10 N;   1-M(F_n)=0,35·10 NH;

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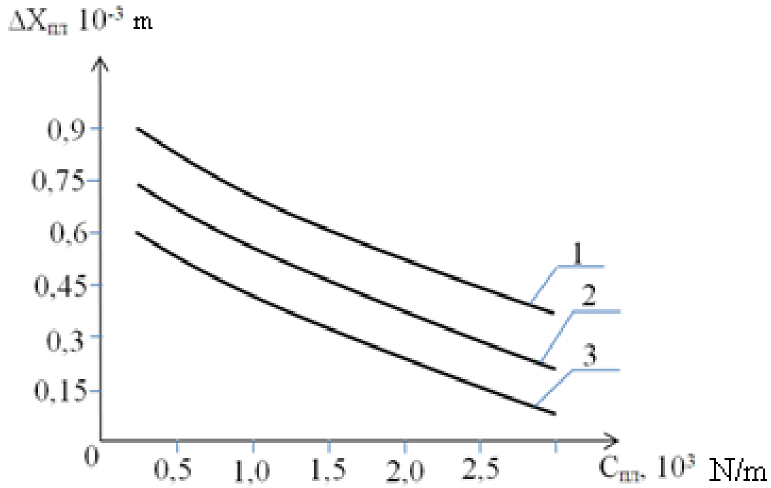

б) 1-m_k=0,05 kg; 2-m_k=0,075 kg; 3-m_k=0,1 kg;

a) graphs of the column vibration coverage dependence on the base reference factor;

b) The graph of the plate vibration band dependent on the beam coefficient.

Fig. 6.

At the same time, the values of random constituents in the vibration laws were 5% -7%. The results obtained were reconstructed graphs (Figure 6a). The analysis of the obtained graphic linkage has shown that, with the increase in the strength of the collar supporting support, the colonic vibration fluctuates in the non-linear law. With the increase in cotton pick-up, the vibration area increases.

It is recommended that values of colonic base reference values $(0.3 \div 0.7) \cdot 10^4$ should be maintained so as to ensure that the colonic oscillation coverage $(0.18 \div 0.25) \cdot 10^3$ is not higher than. Figure 6b presents graphic references describing the effect of colonic plate base on the change in its vibration profile.

Graphics analysis showed that, with the increase in the plate mass, the vibration coverage chart almost paralleled. Thus, the increase in the base's commensurability factor leads to the reduction of the plate vibration band's non-linearity.

In this case, the reference base values of the base plate $(1,4 \div 2,5) \cdot 10^3$ N/m. Theoretical analysis of the parameters of effective polymer oscillatory polynomials is provided.

IV. CONCLUSION

A new colonial design of saw genie has been developed. Dynamic and mathematical models of algebraic fluctuations were obtained. Coloscopic and plate vibration laws are based on the variations in cotton resistance, strength parity coefficients, colonic and plate mass. Increasing the effect of cotton has increased the amplitude, increasing the strength of the base, leading to reduced amplitude. The construction parameters are recommended.

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