dinates is the center. Periodic solution of the system (3) corresponds to the letter event.

Thus, conditions of existence of periodic solutions for system (3) comes to the fulfillment of two requirements:

a) Function $F(x, y)$ must be defined in sense;

b) $a_o = \frac{1}{\pi}\int_0^{2\pi} \frac{R_o^{(m+1)}(\theta)}{F_o^{(m+1)}(\theta)} d\theta = 0.$

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ABOUT A BOUNDARY-VALUE PROBLEM OF STURM-LIOUVILLE WITH NOT SEPARABLE BOUNDARY CONDITIONS OF THE FIRST TYPE

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Let's consider differential operator Sturm-Liouville of the second order:

$$-y''(x)+q(x)\cdot y(x)=\lambda\cdot a^2\cdot y(x),\quad 0\le x\le\pi,\quad a>0, \tag{1}$$

with not separable boundary conditions of the first type (see [1]):

$$\begin{cases} y'(0)+a_{11}\cdot y(0)+a_{12}\cdot y(\pi)=0, \\ y'(\pi)+a_{21}\cdot y(0)+a_{22}\cdot y(\pi)=0, \end{cases} \tag{2}$$

where $a_{km}\in C\quad (k,m=1;2)$, and it is supposed that potential $q(x)$ – summable function on the segment $[0;\pi]$:

$$q(x)\in L_1[0;\pi](=)\left(\int_0^x q(t)dt\right)'_x = q(x) \tag{3}$$

almost everywhere on $[0;\pi]$.

Theorem. Asymptotics of the eigenvalues of the differential operator (1)–(2) with a condition (3) has the following kind:

$$s_k=\frac{k}{a}+\frac{d_{1k}}{ak}+\frac{d_{2k}}{ak^2}+O\left(\frac{1}{k^3}\right),\quad k=1,2,3,... \tag{4}$$

and for this

$$d_{1k}=\frac{1}{2\pi}\cdot\left[\int_0^\pi q(t)dt+\int_0^\pi q(t)\cos(2kt)dt-2(a_{11}-a_{22}+a_{12}-a_{21})\right], \tag{5}$$

$$\begin{aligned} d_{2k}=&-\frac{d_{1k}}{2\pi}\cdot\int_0^\pi(2t-\pi)q(t)\cdot\sin(2kt)dt+\frac{a_{11}-a_{22}}{2\pi}\cdot\int_0^\pi q(t)\sin(2kt)dt- \\ &-\frac{1}{4\pi}\cdot\int_0^\pi q(t)\cdot\left(\int_0^t q(\zeta)\cdot[\sin(2k\zeta)-\sin(2kt)-\sin(2k(\zeta-t))]\cdot d\zeta\right)dt,... \end{aligned} \tag{6}$$

The theorem is proved by methods of the chapter 5 of the monograph [2].

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THE MATERIAL WORLDS HIERARCHY EMPIRICAL MODELS

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As, now, it was known, on the basis of all those natural science models, having described in the author's papers [1, 2] etc, having taking into account the physicists' empirical conclusions, the findings, and the experimental results after Albert Einstein, the STEREOCHRONODYNAMICS objective reasons had been noted – the physical theory, that could be created the time – space mathematical model, which should to be had the quite necessary and the sufficient flexibility in the time – space all the properties description, including the modern physical