

Chistyakov A. E. (Don State Technical University, Rostov-on-Don), **Kuznetsova I. Y.** (Southern Federal University, Rostov-on-Don) **An approach to finding the members of the sequence arising from the error estimating of the numerical solution of the problem of modeling stochastic oscillatory processes**

The paper describes an approach to finding the members of the sequence that arises when estimating the error of the numerical solution of the wave problem.

Theorem. The members of the sequence

$$C^{n+1} = \frac{2}{1+k}C^n - \frac{1}{1+k}C^{n-1}, \quad C^0 = 1, \quad C^1 = \frac{2}{1+k} \quad (1)$$

have the form

$$C^n = \left(\frac{1}{\sqrt{1+k}} \right)^n \left(\cos(n\phi_i) + \frac{1}{\sqrt{k}} \sin(n\phi_i) \right), \quad \cos(n\phi_i) = \frac{1}{\sqrt{1+k}}.$$

The sequence (1) arises in the numerical solution of the wave equation based on an implicit difference scheme. Note that the analytical solution of the wave equation can be obtained, for example, by the Rote method [1], but in practice this equation is solved by numerical methods.

REFERENCES

1. *Sukhinov, A. I., Chistyakov, A. E.* Error solving the wave equation based on the scheme with weights // *Math. Models Comput. Simul.* – 2017. – Vol. 9, Is. 6. – p. 649–656. DOI: 10.1134/S2070048217060126

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