
Construction of an interactive teaching model of the method for solving the normal homogeneous system of differential equations of n -th order

© K.V. Titov, M.V. Budilovich, I.V. Dubogray

Bauman Moscow State Technical University, Moscow, 105005, Russia

The article is devoted to development of computer technologies in education. It is important to transfer the known methods of tasks decisions into the form which is convenient for educational programs writing in one of the computer mathematic system, for example, MathCAD or Maple. In this case, such formulation of the learning process can be considered as one submitted to the ultimate goal which is getting the entire spectrum of knowledge from theory to practical result. The available electronic resource on this subject and the reference www.bmstu.ru/ps/~kvtitov on it allow to get multivariable solutions in the interactive computing and, in this sense, it makes the article mobile and original in the part of information and telecommunication technologies using in the internet-space. The task solution is accompanied by a graphic illustration, a possibility to animate is available. It is possible to modify the input data in the interactive mode and thus to get solutions again what allows to develop an experimental research.

Keywords: differential equations, computer technologies, Internet, systems of computer mathematics, education.

REFERENCES

- [1] Piskunov N.S. *Differentsialnoe i integralnoe ischisleniya* [Differential and integral calculus]. Vol. 2. Moscow, Nauka Publ., 1985, pp. 560.
- [2] Edwards Ch.H., Penny D. E. *Differentsialnye uravneniya i problema sobstvennykh znacheniy: modelirovanie I vychislenie s pomoschyu Mathematica, Maple u MATLAB* [Differential equations and Boundary Value Problems: Computing and Modeling]. 3rd ed. Moscow, Piter Publ., 2007, pp. 380 [in Russian].
- [3] Titov K.V. *Vestnik MGTU im. N.E. Baumana. Seriya Estestvennye nauki — Herald of the Bauman Moscow State Technical University. Series: Natural sciences*, 2011, special issue «Mathematical Modeling», pp. 110–113.
- [4] Diakonov V.P. *Maple 6*. St. Petersburg, Piter Publ., 2001, 608 p.
- [5] www.bmstu.ru/ps/~kvtitov
- [6] Klima R., Sigmon N., Stitzinger E. *Applications of Abstract Algebra with Maple*. CRC Press, 2000, 350 p.
- [7] Abell M., Braselton J. *Maple V by Example*. 2nd ed. Academic Press, 1998. 320 p.
- [8] Abell M., Braselton J. *Instructors Resource Manual for Modern Differential Equations: Theory, Applications, Technology*. Saunders College Publishing, 1996, 210 p.
- [9] Yang W.Y., Cao W., Chung T.-S., Morris J. *Applied numerical methods using Matlab*. John Wiley and Sons, Inc., Hoboken, New Jersey, 2005, 290 p.

Titov K.V. (b. 1946) graduated Bauman Moscow Higher Technical School in 1969. Ph.D., assoc. professor of the Computational Mathematics and Mathematical Physics Department of Bauman Moscow State Technical University. He is the author of more than 65 scientific works and methodical manuals in the field of automated control and management theory and computational mathematics. e-mail: kvtito@mail.ru

Budilovich M.V. (b. 1952) graduated from Bauman Moscow Higher Technical School in 1979. Ph.D., assoc. professor of the Computational Mathematics and Mathematical Physics Department of Bauman Moscow State Technical University. Author of more than 10 scientific works. e-mail: budilovich.misha@yandex.ru

Dubogray I.V. (b. 1943) graduated from the Mechanics and Mathematics Faculty of the Lomonosov Moscow State University in 1965. Assoc. professor of the Computational Mathematics and Mathematical Physics Department of Bauman Moscow State Technical University. The author of several scientific works in the field of applied mathematics. e-mail: irina.dubograi@yandex.ru