

of signals by varying some parameters; it can be used in numerous scientific domains and particularly in mathematics and in engineering. For the case treated in this paper, 32 elliptical trigonometric functions are defined; only two functions are analyzed and simulated using software as Matlab-Simulink. In general, a connection cable with specific transmission data protocol connects any industrial system to the computer. One can use the studied functions in order to generate control signals in need for power components of the industrial system.

The elliptical trigonometry functions will be widely used in electronic domain especially in power electronics. Thus, several studied will be improved and developed after introducing the new functions of the elliptic trigonometry. Some mathematical expressions and electronic circuits will be replaced by simplified expressions and reduced circuits.

References:

- [1] Claude Bayeh, M. Bernard, N. Moubayed, Introduction to the elliptical trigonometry, *WSEAS Transactions on Mathematics*, Issue 9, Volume 8, September 2009, pp. 551-560.
- [2] N. Moubayed, Claude Bayeh, M. Bernard, A survey on modeling and simulation of a signal source with controlled waveforms for industrial electronic applications, *WSEAS Transactions on Circuits and Systems*, Issue 11, Volume 8, November 2009, pp. 843-852.
- [3] M. Christopher, *From Eudoxus to Einstein: A History of Mathematical Astronomy*, Cambridge University Press, 2004.
- [4] Eric W. Weisstein, *Trigonometric Addition Formulas*, Wolfram MathWorld, 1999-2009.
- [5] Paul A. Foerster, *Algebra and Trigonometry: Functions and Applications*, Addison-Wesley publishing company, 1998.
- [6] Robert C. Fisher and Allen D. Ziebur, *Integrated Algebra and Trigonometry with Analytic Geometry*, Pearson Education Canada, 2006.
- [7] E. Demiralp, Applications of High Dimensional Model Representations to Computer Vision, *WSEAS Transactions on Mathematics*, Issue 4, Volume 8, April 2009.
- [8] A. I. Grebennikov, Fast algorithm for solution of Dirichlet problem for Laplace equation, *WSEAS Transactions on Computers Journal*, 2(4), pp. 1039 – 1043, 2003.
- [9] I. Mitran, F.D. Popescu, M.S. Nan, S.S. Soba, Possibilities for Increasing the Use of Machineries Using Computer Assisted Statistical Methods, *WSEAS Transactions on Mathematics*, Issue 2, Volume 8, February 2009.
- [10] Q. Liu, Some Preconditioning Techniques for Linear Systems, *WSEAS Transactions on Mathematics*, Issue 9, Volume 7, September 2008.
- [11] A. I. Grebennikov, The study of the approximation quality of GR-method for solution of the Dirichlet problem for Laplace equation. *WSEAS Transactions on Mathematics Journal*, 2(4), pp. 312-317, 2003.
- [12] R. Bracewell, *Heaviside's Unit Step Function. The Fourier Transform and its Applications*, 3rd edition, New York: McGraw-Hill, pp. 61-65, 2000.
- [13] Milton Abramowitz and Irene A. Stegun, eds, *Handbook of mathematical functions with formulas, graphs and mathematical tables*, 9th printing, New York: Dover, 1972.
- [14] Vinit Kantabutra, On hardware for computing exponential and trigonometric functions, *IEEE Transactions on Computers*, Vol. 45, issue 3, pp. 328–339, 1996.
- [15] H. P. Thielman, A generalization of trigonometry, *National mathematics magazine*, Vol. 11, No. 8, 1937, pp. 349-351.
- [16] N. J. Wildberger, *Divine proportions: Rational Trigonometry to Universal Geometry*, Wild Egg, Sydney, 2005.
- [17] Cyril W. Lander, *Power electronics*, third edition, McGraw-Hill Education, 1993.
- [18] I. I. Siller-Alcala, M. Abderrahim, J. Jaimes-Ponce and R. Alcantara-Ramirez, Speed-Sensorless Nonlinear Predictive Control of a Squirrel Cage Motor, *WSEAS Transactions on Systems and Control*, Issue 2, Volume 3, February 2008.
- [19] H. Azizi, A. Vahedi and F. Rashidi, Sensorless Speed Control of Induction Motor Derives Using a Robust and Adaptive Neuro-Fuzzy Based, *WSEAS Transactions on Systems*, Issue 9, Vol 4, September 2005.
- [20] J. S. Thongam and M. Ouhrouche K. Ohyama, Flux Estimation for Speed Sensorless Rotor Flux Oriented Controlled Induction Motor Drive, *WSEAS Transactions on Systems*, Issue 1, Vol. 5, January 2006, pp. 63-69.