Study, Design and Simulation of a Laboratory Module

Related to filters

Marius Dan Benta Science and Engineering Materials Transilvania University of Brasov Brasov, Romania marius.bentea@unitbv.ro Laura Mihaela Lelutiu Electrical Engineering and Computer Science Transilvania University of Brasov Brasov, Romania laura.lelutiu@unitbv.ro

Abstract—This paper presents the study, design and simulation of a laboratory module related to filters. With this laboratory platform it was accomplish a comparative study between current feedback (CFA) and voltage feedback (VFA). Because the laboratory platform has an educational role, it was presented some practical aspects of active filters measurement and also the differences between the measured values and those measured with the Spice program. The laboratory module analyzes the next aspects: choosing optimal resistance values in circuits with CFA and the comparison between OA-CFA and OA-VFA from the frequency point of view.

Keywords—filters; laboratory module; simulation

REFERENCES

- [1] James Karki, Voltage Feedback vs. Current Feedback Op Amps, Texas Instruments, Dallas, Texas 75265, 1998.
- [2] Franco, Sergio, "Design with Operational Amplifiers and Analog Integrated Circuits," McGraw-Hill, p. 293. ISBN 0-07-232084-2,2002.
- [3] Miroslav D. Lutovac, Dejan V. Tošić, Brian Lawrence Evans, "Filter Design for Signal Processing Using MATLAB and Mathematica," Miroslav Lutovac, ISBN 0201361302, 2001. [4] B. A. Shenoi, "Introduction to Digital Signal Processing and Filter Design," John Wiley & Sons, ISBN 0471656380, 2005.
- [5] L. D. Paarmann, "Design and Analysis of Analog Filters: A Signal Processing Perspective," Springer, ISBN 0792373731, 2001.
- [6] J.S.Chitode, "Digital Signal Processing, Technical Publications," ISBN 8184316461, 2009.
- [7] Feștilă, L. "Circuite integrate analogice II," Editura Casa Cărții de Știință, Cluj-Napoca, 1999.
- [8] Leland B. Jackson, "Digital Filters and Signal Processing," Springer, ISBN 079239559X, 1996.
- [9] Gray, Paul R. Meyer, Robert G. Paul R. Gray, and Robert G. Meyer, "Analysis and design of analog integrated circuits," No. 621.3. 049.77. John Wiley & Sons, 1993.
- [10] R Lidgey, F. J., and K. Hayatleh, "Current-feedback operational amplifiers and applications," Electronics & communication engineering journal 9.4, pp. 176-182, 1997.
- [11] Lelutiu L., "Measuring, data acquisition and processing systems," Transilvania University of Brasov, ISBN 978-606-19-0304-7, 2013. [12] Cabeza, Rafael, Alfonso Carlosena, and Luis Serrano, "Unified approach to the implementations of universal active device," Electronics Letters 30.8 pp. 618-620, 1994.
- [13] Fabre, Alain, et al., "Current controlled band pass filter based on translinear conveyors," Electronics Letters 31.20 pp.1727-1728, 1995.
- [14] Biolek, Zdeněk, Dalibor Biolek, "SPICE Model of Memristor with Nonlinear Dopant Drift" Radioengineering 18.2, 2009.
- [15] Tudor, M., "SPICE," Editura Teora, București, 1996.
- [16] K. S. Kundert, "SPICE The Designer's Guide to SPICE and Spectre," Kluwer. Academic Publishers, Boston, 1995.