Examples files for the ASIZ program:

The files are distributed as the EdFil descriptions (.CIR), the ASIZ input files (.NET) and value lists (.VAL).

LP5SC4 5th order bilinear elliptic SC filter with 4 phases. Output node:21. A circuit used as example in various papers about SC circuit analysis. From: J. A. Nossek and G. C. Temes, "Switched-Capacitor filter design using bilinear element modeling", IEEE Trans. Circ. Syst., pp. 481-491, June 1980.

LP6BSI 6th order bilinear Chebyschev SI filter in cascade of biquads. From: J. B. Hughes, I. C. Macbeth, and D. M. Pattullo, "Switched current filters", IEE Proceedings, Vol. 137, Pt. G, No. 2, pp. 156-162, April 1990.

LP5BSI 5th order bilinear Chebyshev SI filter using bilinear integrators. Value list: CH5.VAL. From: I. Song and G. W. Roberts, "A 5th order bilinear switched-current Chebyshev filter", Proc. 1993 IEEE ISCAS, Chicago, IL, USA, pp. 1097-1100, May 1993.

LP5E1SI 5th order bilinear low-pass filter using first-generation Euler integrators. From: G. Roberts and A. Sedra, Chapter 9 of the book "Switched-currents, an analogue technique for digital technology", Edited by C. Toumazou, J. B. Hughes and N. C. Battersby, IEE, London, 1993. The formulas for the elements were taken from the following example. Value list: CH5.VAL or EL5.VAL.

LP5E2SI 5th order bilinear low-pass filter using second-generation Euler integrators. From: A. C. M. de Queiroz and P. R. M. Pinheiro, "Bilinear switched-current ladder filters using Euler integrators". IEEE Transactions on Circuits and Systems-I, Vol. 43, No. 1, January 1996, pp. 66-70. Value list: CH5.VAL or EL5.VAL.

BP6BSI 6th order bilinear elliptic band-pass filter using bilinear integrators. The value list is the file BP610.VAL. From: A. C. M. de Queiroz and P. M. Pinheiro, "Switched-current ladder band-pass filters", Proc. 1994 IEEE ISCAS, London, UK, pp. 309-312, May 1994.

BP6ESI 6th order bilinear elliptic band-pass filter using Euler integrators. Value list: BP610.VAL. From: A. C. M. de Queiroz and P. M. Pinheiro, "Switched-current ladder band-pass filters", Proc. 1994 IEEE ISCAS, London, UK, pp. 309-312, May 1994.

Eight different basic structures for SI low-pass bilinear filters, all of 5th order, and using the value lists CH5.VAL or EL5.VAL, for Chebyshev or Cauer (elliptic) filters:

BILIN1S -Bilinear filter using first-generation bilinear integrators.

BILIN2S -Bilinear filter using second-generation bilinear integrators.

EULER1S -Bilinear filter using first-generation Euler integrators.

EULER2S -Bilinear filter using second-generation Euler integrators.

CSBILIND-Bilinear filter using component-simulation bilinear integrators in direct form.

CSBILINM-Bilinear filter using component-simulation bilinear integrators in modulated form.

CSEULERD-Bilinear filter using component-simulation Euler integrators in direct form.

CSEULERM-Bilinear filter using component-simulation Euler integrators in modulated form.

For component-simulation filters, see: J. Schechtman, A. C. M. de Queiroz, and L. P. Caloba, "Switched-current filters by component simulation", Analog Integrated Circuits and Signal Processing, july 1997, pp. 303-309.

CKFT-Example of clock feedthrough analysis, showing clock feedthrough cancellation by scaled replication. See: A. C. M. de Queiroz and J. Schechtman, "Elimination of nonlinear clock feedthrough

in component-simulation switched-current circuits", 1998 IEEE ISCAS, Monterey, EUA, may 1998, Vol. I, pp. 325-328.

OSCILL Two-integrator-loop SC oscillator. The voltage source supplies an initial condition if set to be a step. The program doesn't accept interchange between the source and the capacitor in series with it, due to the limitations on the structures that it can analyze.

Most of the examples include formulas for the element values in the .CIR file. The EdFil program evaluates these formulas to obtain the final element values for the netlist file. To design a different filter, it is enough to change the rate the netlist file. The value lists included are element values for passive LC doubly terminated ladder filters, with appropriate frequency predistortion for a bilinear filter, nor-malized for unitary terminations. The examples of bilinear Chebyshev filters illustrate possible problems in finding multiple transmission zeros. Change the magnitude tolerance in the poles and zeros parameters window to a higher value to compute correctly the multiple zeros at the Nyquist frequency in these filters. The output node for all the SI filters is 1. In all the examples the correct transfer function is obtained with impulse sampling.

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