

pickoff nodes varies between two and four. This is summarized in the following table:

Summing Nodes	Pick-off Nodes	Configuration
2	2	$S_{a_1}, S_{a_1}^T$
2	3	$S_{a_2}, S_{a_3}, S_{a_4}, S_{b_1}^T$
3	2	$S_{a_2}^T, S_{a_3}^T, S_{a_4}^T, S_{b_1}$
3	3	$S_{a_5}, S_{a_5}^T, S_{a_6}, S_{a_6}^T, S_{b_2}, S_{b_2}^T, S_{b_3}, S_{b_3}^T, S_{b_4}, S_{b_4}^T$
4	3	$S_{b_5}, S_{b_6}$
3	4	$S_{b_5}^T, S_{b_6}^T$

Diagrams of these realizations are given in Figs. 1-8. It remains to compare the various structures on the basis of dynamic range and roundoff noise.

## REFERENCES

- [1] L. B. Jackson, "An analysis of roundoff noise in digital filters," Sc.D. thesis, Stevens Institute of Technology, Hoboken, N. J., 1967.
- [2] S. Hess, "A deterministic analysis of limit cycle oscillations in recursive digital filters due to quantization," Ph.D. dissertation, U. S. Naval Postgraduate School, Monterey, Calif., Dec. 1970.

## Correction to "Two Scattering Matrix Programs for Active Circuit Analysis"

PHICHANI BODHARAMIK, LES BESSER, AND  
ROBERT W. NEWCOMB

The authors of the above paper<sup>1</sup> wish to correct a few misprints. Equation (4) should read:

$$s = \begin{bmatrix} s_{11_1} + s_{12_1} s_{11_2} (1 - s_{22_1} s_{11_2})^{-1} s_{21_1} & s_{12_1} (1 - s_{11_2} s_{22_1})^{-1} s_{12_2} \\ s_{21_2} (1 - s_{22_1} s_{11_2})^{-1} s_{21_1} & s_{22_2} + s_{21_2} s_{22_1} (1 - s_{11_2} s_{22_1})^{-1} s_{12_2} \end{bmatrix}. \quad (4)$$

The 2 multiplier in the last equation of (7b) should be deleted, and in Fig. 4 the index *FB* should be *IFB* in the two places where it occurs.

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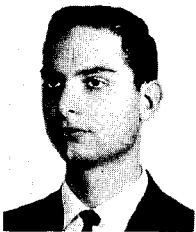
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<sup>1</sup> P. Bodharamik, L. Besser, and R. W. Newcomb, *IEEE Trans. Circuit Theory*, vol. CT-18, pp. 610-619, Nov. 1971.

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