

XXIV. NETWORK SYNTHESIS

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RESEARCH OBJECTIVES

The general character of these objectives, as stated in the Quarterly Progress Report of January 15, 1958, page 155, continue to hold, and we would like to mention that two problems happened, by accident (not by any general plan), to be worked upon during the past year and are continuing to engage our attention – problems that injected themselves into our sphere of activity because of our continued interest in the exploitation of transformation theory in connection with active and/or nonbilateral networks and with the problem of equivalent networks, as well as the synthesis of networks by topological means.

One of these problems, which has been worked upon by others, especially by R. Gould (1), deals with the construction of a network graph from a given cut-set matrix. Our results are being prepared for publication. The other problem deals with the construction of an n terminal-pair resistive network from a given node conductance matrix of order n . Although this problem has also been worked upon by others, notably in a paper by L. Weinberg and P. Slepian (2), a general solution has not been presented for $n > 3$. We are nearing a general solution to this problem. Further progress on the active network synthesis methods with the use of linear transformation theory is expected and will be reported.

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References

1. R. Gould, Graphs and vector spaces, *J. Math. Phys.* 37, 193-214 (Oct. 1958).
2. L. Weinberg and P. Slepian, Synthesis applications of paramount and dominant matrices, paper presented at National Electronics Conference, Chicago, Oct. 1958.