

## XXV. CIRCUIT THEORY\*

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### RESEARCH OBJECTIVES

The long-range objective of the research that will be reported under Circuit Theory is to extend our knowledge of the properties of electric networks (and related systems), both active and passive.

Current short-range projects include work on parametric amplifiers, devices for nonlinear filtering, general network topology, instrumentation relating to aids to the blind, and the testing of a predetection diversity combiner.

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### A. WORK IN PROGRESS

Effort to express circuit-design constraints in terms of device parameters is being continued. A monograph that will present the general power constraints (that is, limitations on allowed power dissipation) and their relation to circuit realizability limitations is in preparation. Particular emphasis is placed on the derivation of general amplifier limitations.

Two Master's theses related to this problem are now in progress. One deals with the effect of uncontrollable parameter variation on amplifier design, and the other is considering machine-aided analytic continuation as a tool for analysis and synthesis.

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