AN ALGORITHM ON THE ORDER OF COMPLEXITY OF AN ACTIVE NETWORK

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Abstract—The necessary and sufficient conditions are presented in a theorem for the order of complexity of an active RLC network to not exceed that of the passive network resulting when the sources are suppressed. According to this theorem, an algorithm is derived using a unified procedure for evaluating the least upper bound of the order of complexity of a general linear active network. The approach of this algorithm is to transform the original network, which may contain mutual inductance, gyrators, etc., into an equivalent network containing only resistors, inductors, capacitors, and controlled sources, and then calculate the least upper bound of the order of complexity from the network graph. Thus the algorithm is simple and easy to apply and does not require finding a particular tree or making complicated calculations.