

Course material

1. Analysis

Connections: KVL, KCL, graph theory, cut & tie sets

Component laws: R, L, C , op-amp, gyrator, NIC's

multiports, motors, transistors, etc

circuits: Y(s), Z(s), S(s)

state variable, semi-state,

properties: energy, passivity, stability, port-Hamiltonian

bounded-real & positive-real Lemmas \Rightarrow BR, PR

2. Design

PR matrices & BR (s-domain \Rightarrow poles & zeros

formers (s-c-gyrator) \Rightarrow Foster's & Cauer methods

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partial continued fractions

time domains \Rightarrow state or semi-state