4.5 – Signal Flow Graphs

Reading Assignment: *pp. 189-197*

Q: *Using individual device scattering parameters to analyze a complex microwave network results in a lot of **messy** math! Isn't there an **easier** way?*

A: Yes! We can represent a microwave network with its **signal flow graph**.

HO: SIGNAL FLOW GRAPHS

Then, we can **decompose** this graph using a set of standard **rules**.

HO: SERIES RULE

HO: PARALLEL RULE

HO: SELF-LOOP RULE

HO: SPLITTING RULE

It's sort of a **graphical** way to do algebra! Let's do some examples:

EXAMPLE: DECOMPOSITION OF SIGNAL FLOW GRAPHS

EXAMPLE: SIGNAL FLOW GRAPH ANALYSIS

Signal Flow graphs can likewise help us understand the fundamental **physical behavior** of a network or device. It can even help us **approximate** the network in a way that makes it simpler to analyze and/or design!

HO: The Propagation Series