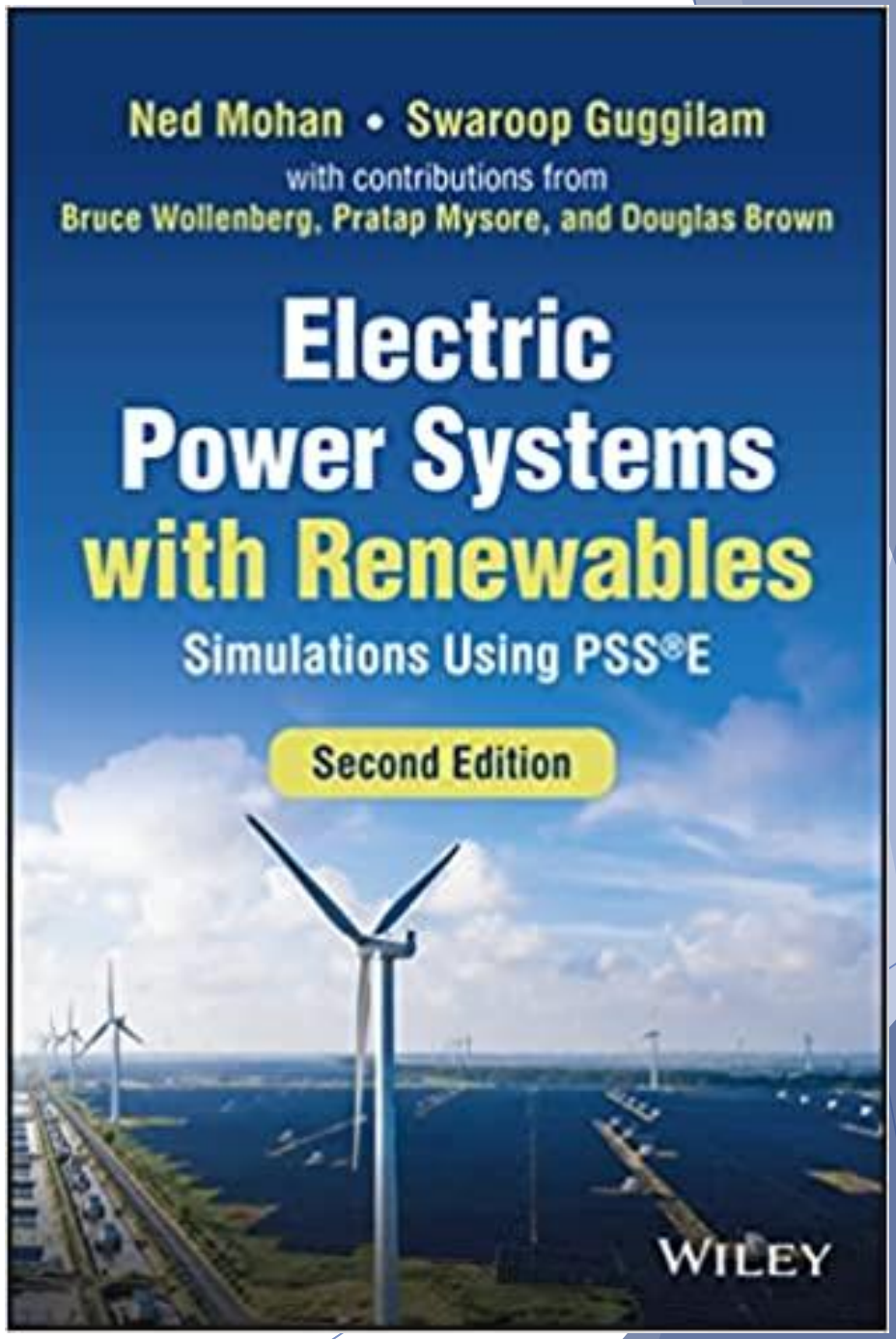
Power Systems Lab using PSS®E and Python

- Dr. Swaroop Guggilam (EPRI)

Associated Textbook

Expected - April 2023

Amazon Link



Highlights

- This lab will be available on **CUSP (https://cusp.umn.edu/)** website for **FREE**.
- Software - PSS®E Xplore Student Version. Available for **FREE**.
- Video tutorials (YouTube Channel to be launched soon). Available for **FREE**.

WHY THIS LAB?

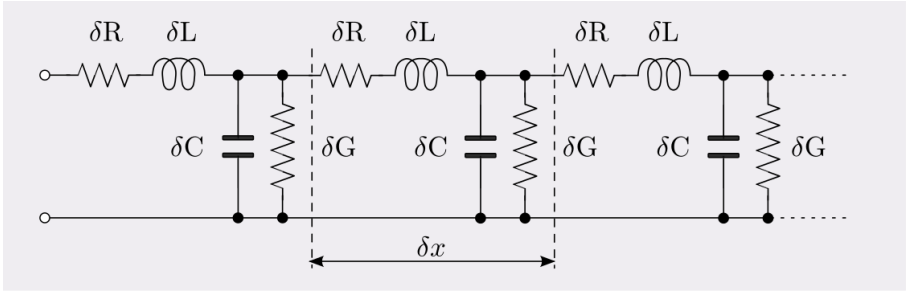
Modeling/Simulations/Visualization

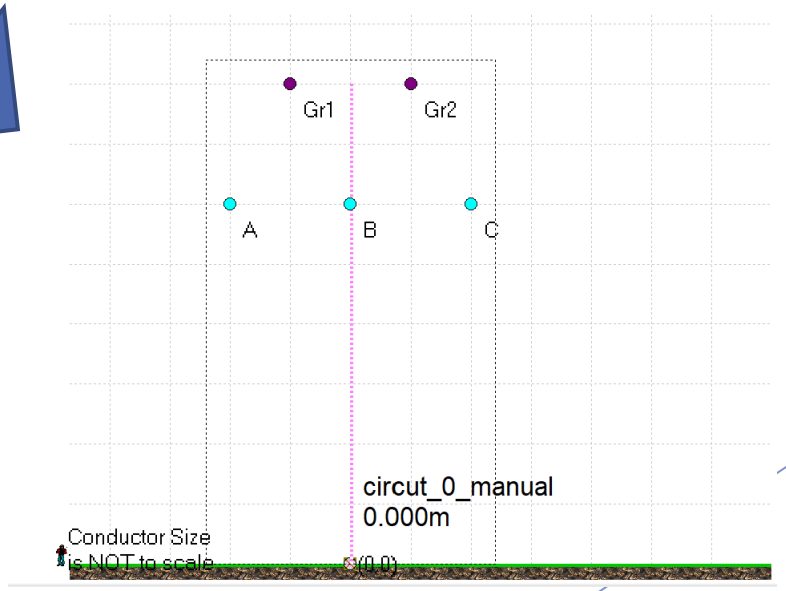
Industry Ready

Future

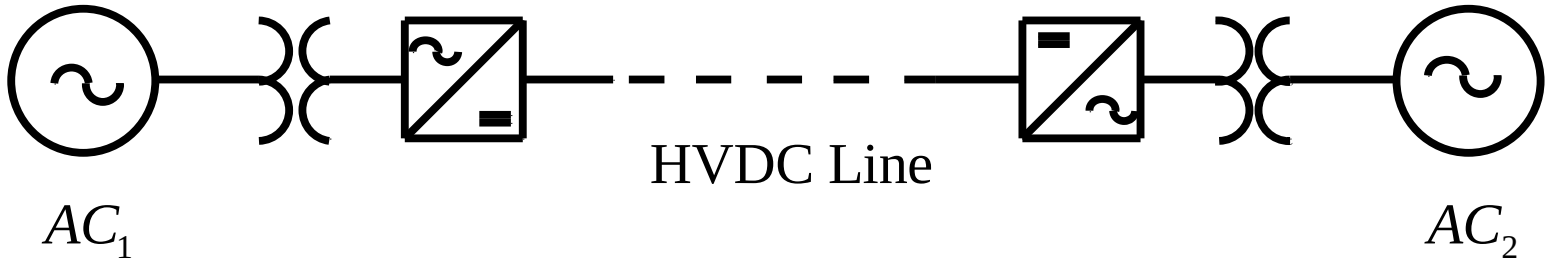
SAMPLE EXPERIMENTS

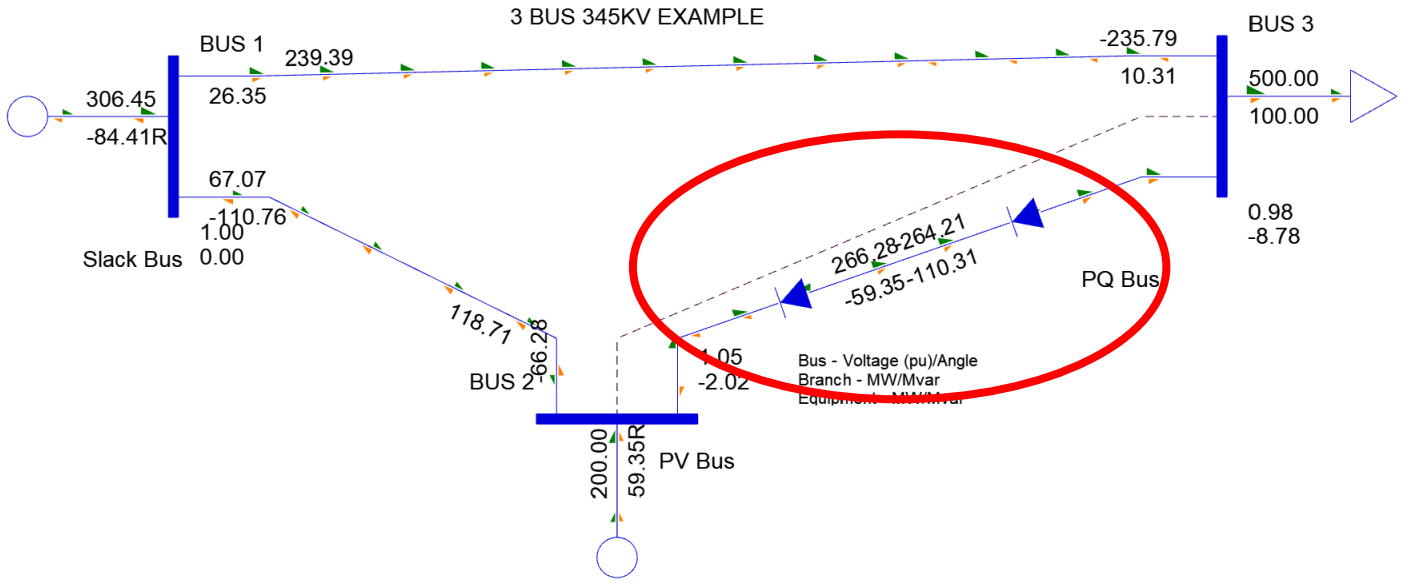
TRANSMISSION LINE CONSTANTS



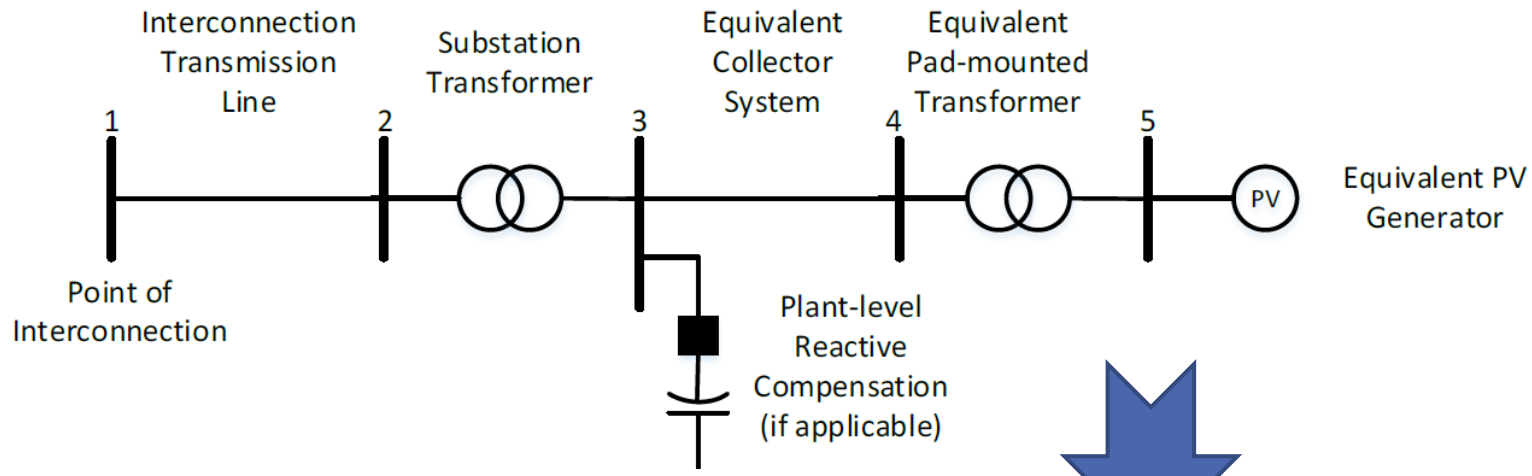


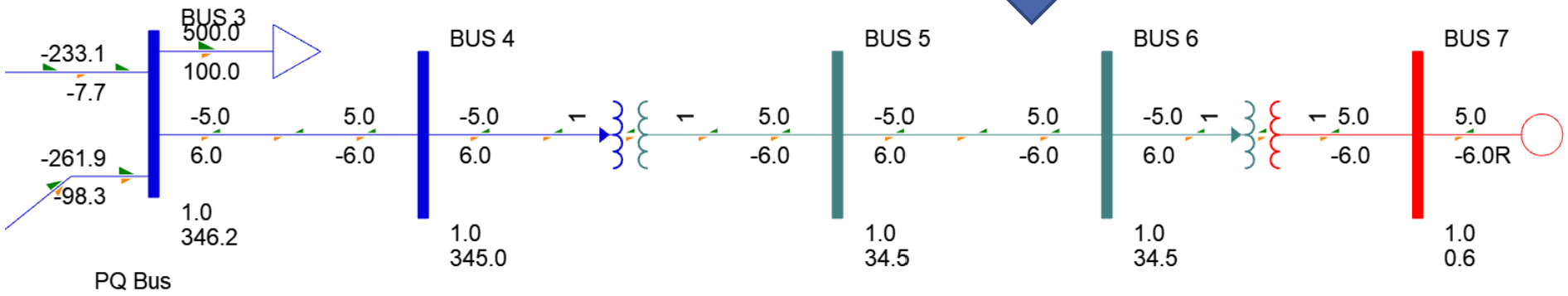
HVDC MODELING





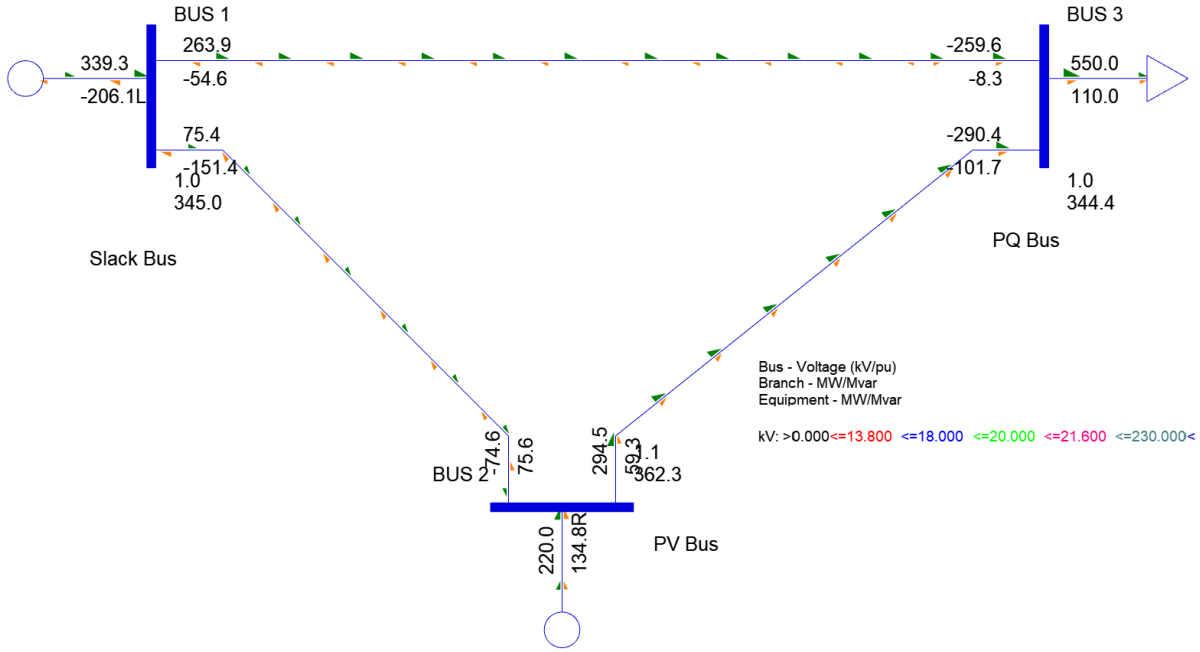
INVERTER BASED RESOURCES (IBR)





*https://www.wecc.org/Reliability/Solar%20PV%20Plant%20Modeling%20and%20Validation%20Guidline.pdf

OPTIMAL POWER FLOW

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Optimal Solution Found.

Minimum fuel cost objective: 2190.99

Elapsed time: 0 minutes, .109863E-01 seconds.

GENERATOR FUEL COST SUMMARY:
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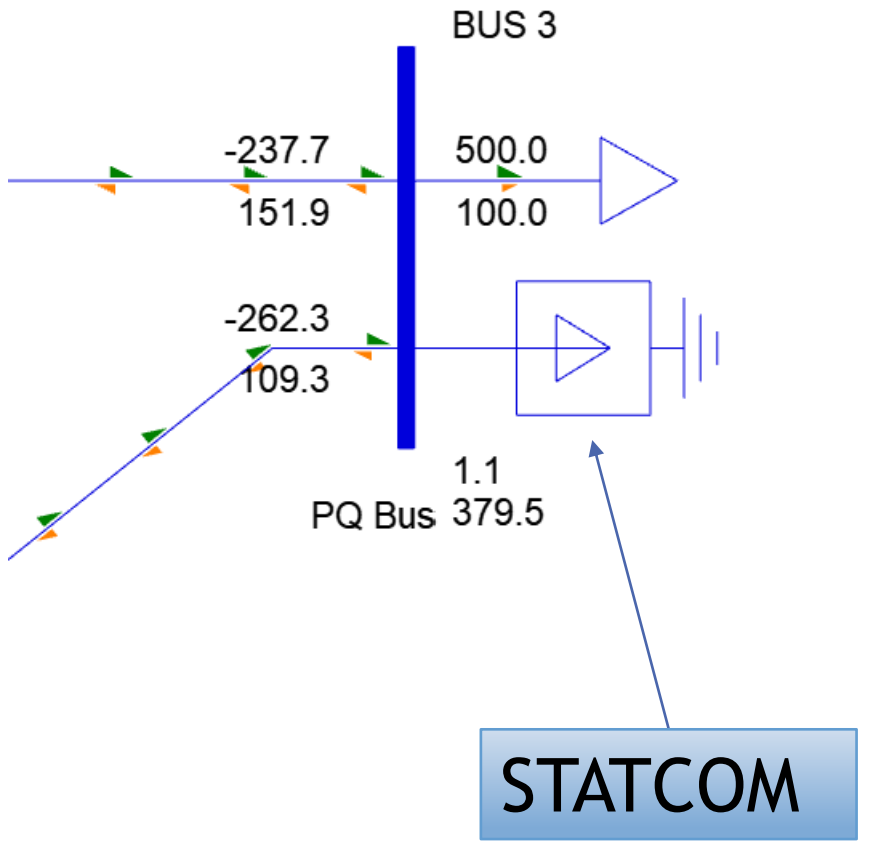
ID	TYPE	FUEL $	MW OUTPUT	MW MINIMUM	MW MAXIMUM	BUS#-SCT	X-- NAME --X	BASKV	ID	PGEN	PFRAC
1	POLY	1402.48	361.20	50.00	450.00	1	BUS 1	345.00	1	361.200	1.000
2	POLY	788.51	197.90	50.00	300.00	2	BUS 2	345.00	1	197.902	1.000
TOTALS:		2190.99	559.10	100.00	750.00						

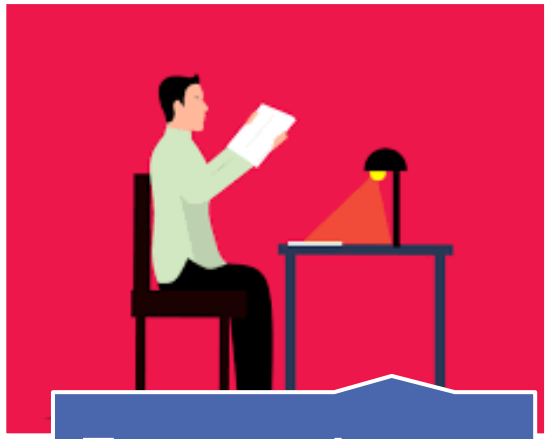
STATCOM

- Provides Voltage Regulation
- Inject or Absorb Reactive Power
- Applicable for Dynamic Simulation or Steady State Power Flow
- Linear V-I curve



PYTHON PROGRAMMING

WHY PYTHON?



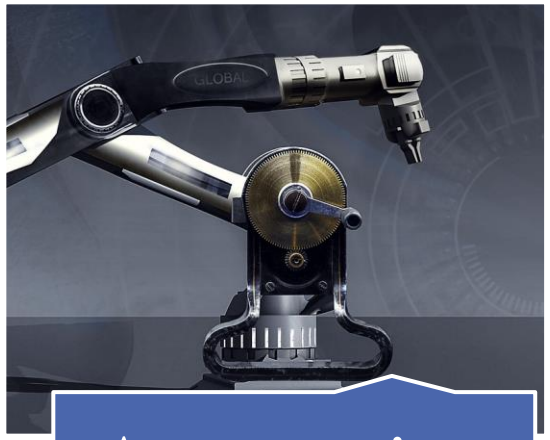
Easy to Learn

Accessible

Support

Libraries

PYTHON SCRIPTING



Automation

Plots

Bulk Analysis

Time Saving

Questions?

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