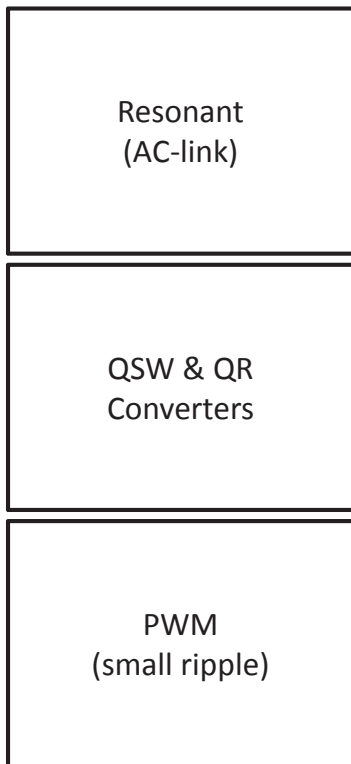
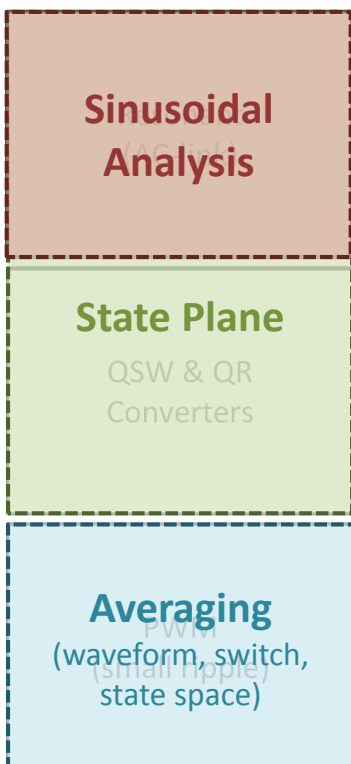


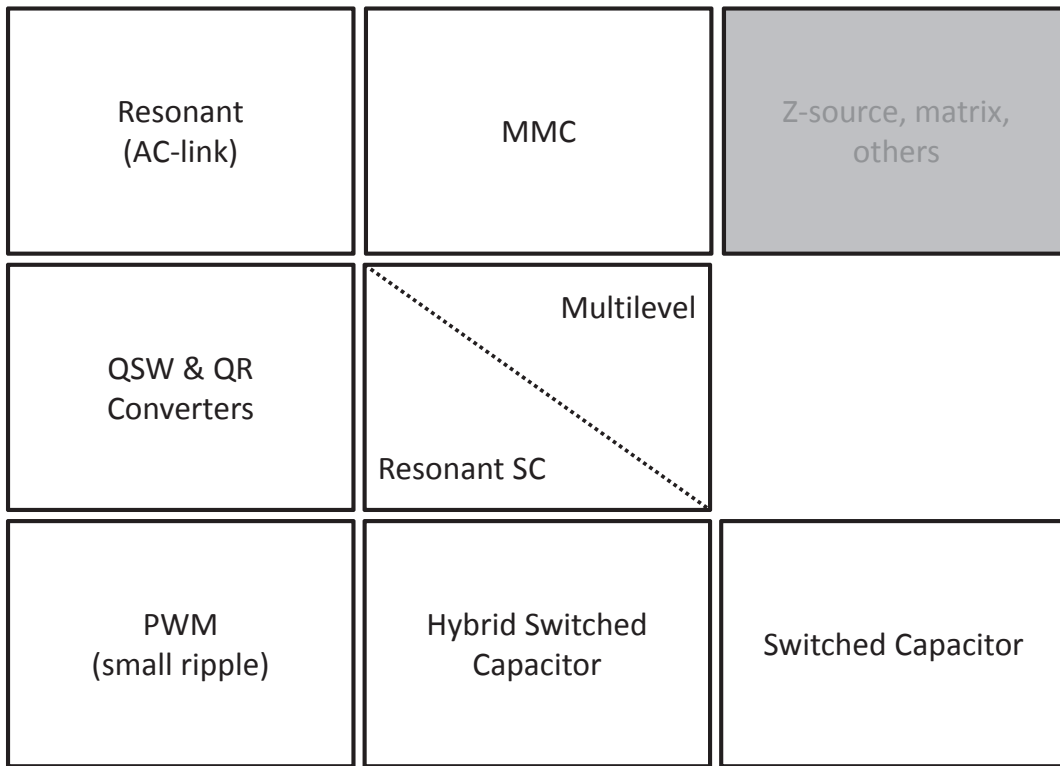
Converter Topologies



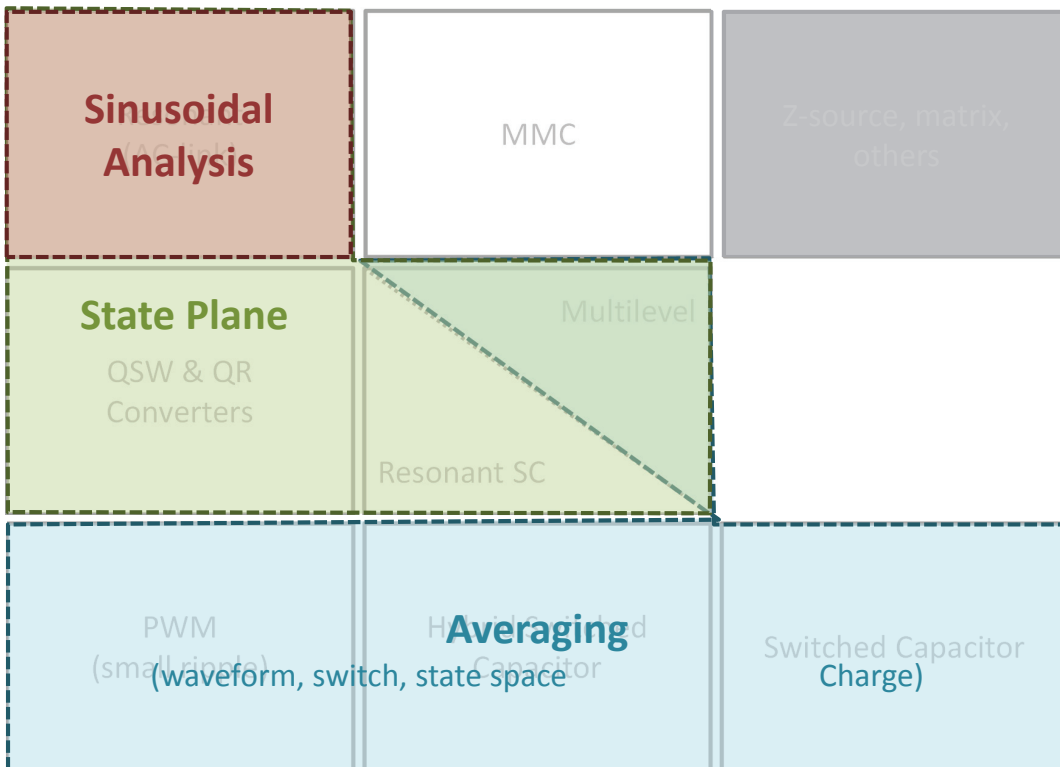
Converter Analysis



Converter Topologies



Converter Analysis

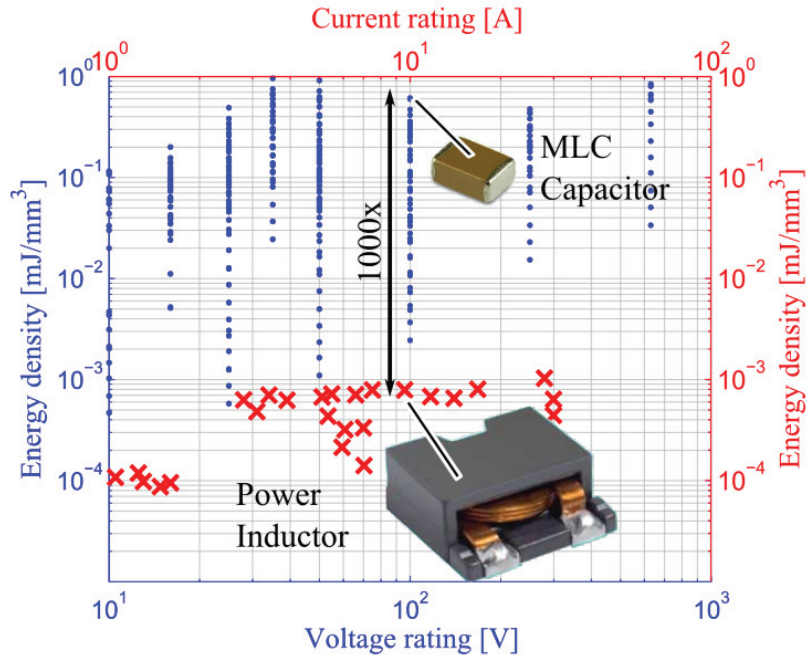


Major Remaining Topics in ECE 581

- Switched Capacitor Converters
- Discrete Time Modeling

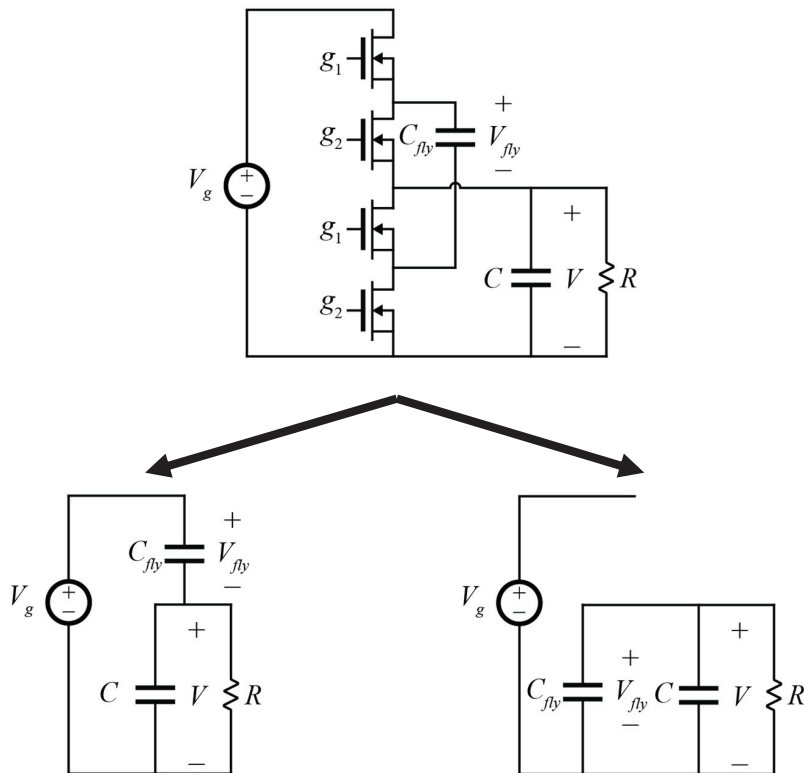
SWITCHED CAPACITOR CONVERTERS

Switched Capacitor Converters



R. Pilawa Podgurski, "Extreme Power Density Converters - Fundamental Techniques and Selected Applications"

A 2:1 SC Converter



SC Converters

- Fixed conversion ratio
 - No regulation (except linear)
- Not lossless, even with ideal elements
- Can be very small, fully integrated

- **Resonant** versions can reduce loss
- **Hybrid** versions can allow regulation

Capacitor Charging: Voltage Source



Capacitor Charging: Current Source



Capacitor Charging: Resonant



Comparison of Capacitor Charging