Capacitor

Young Won Lim
10/15/2011
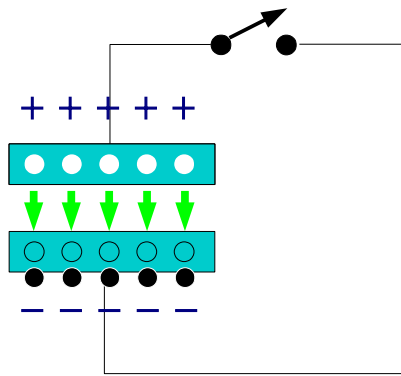
Please send corrections (or suggestions) to youngwlim@hotmail.com.

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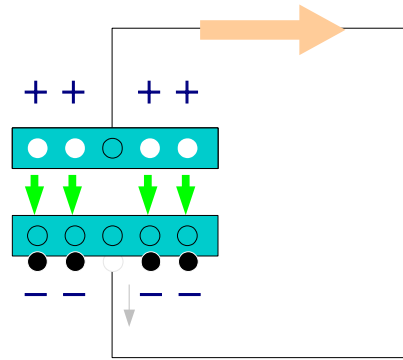
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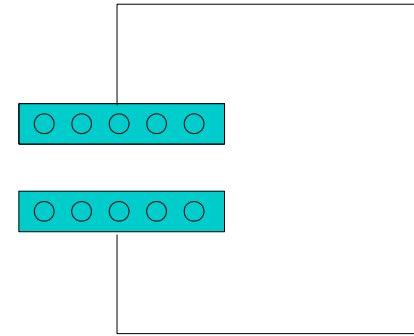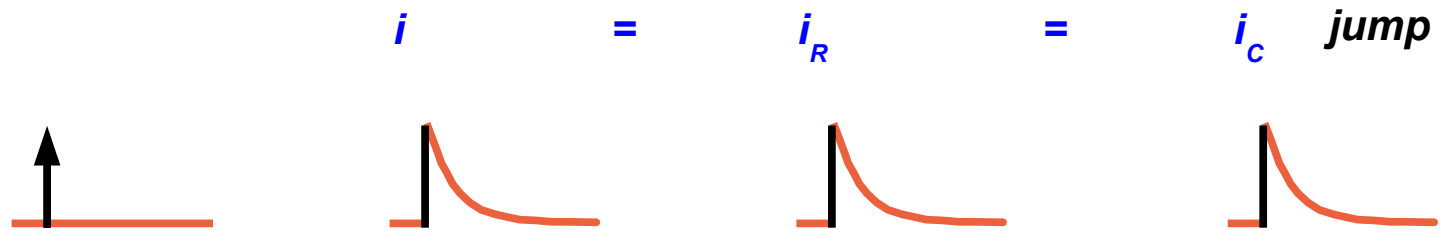
Charge

No more electrons to leave

+ + + + +

− − − − −

crowded electrons prevent other electrons from arriving

Energy stored in Electric Field
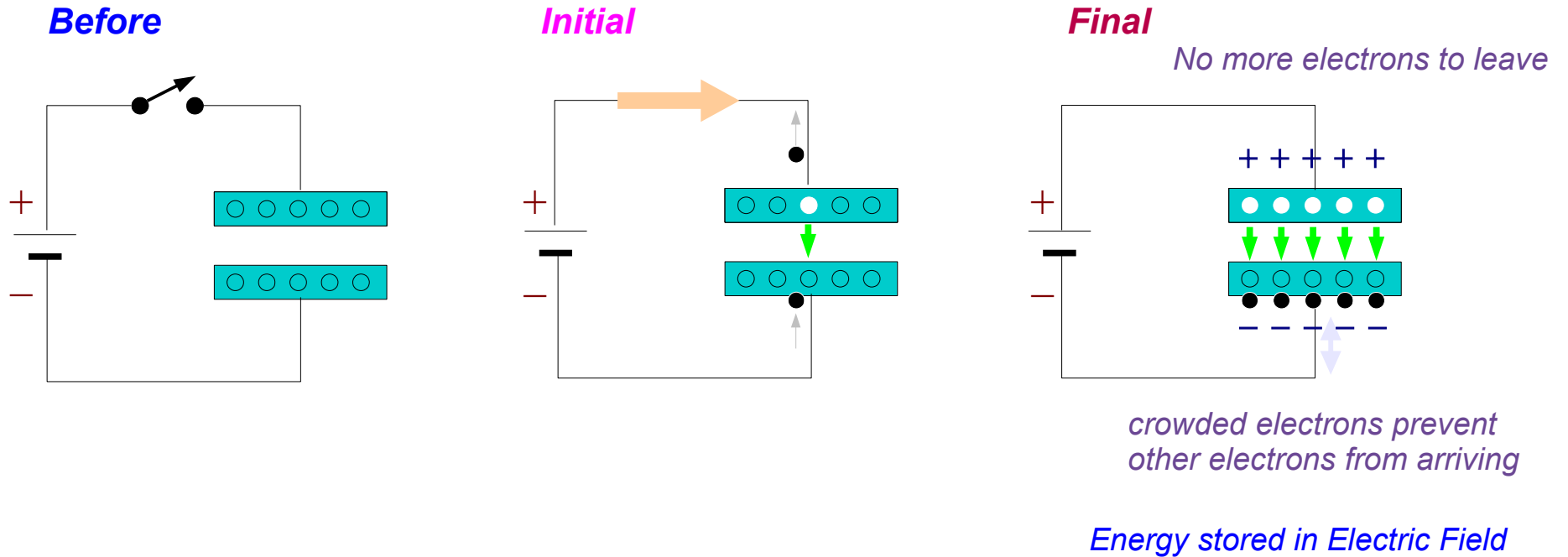
Discharge

Initial

Final

No more electrons moving

Charge

$$v \quad = \quad v_R \quad + \quad v_C \qquad \textit{continuous}$$

$$i \quad = \quad i_R \quad = \quad i_C \qquad \textit{jump}$$

$$i_c = C \cdot \frac{d\, v_c}{d\, t}$$

Discharge

v = v_R + v_C *continuous*

i = i_R = i_C *jump*

$$i_c = C \cdot \frac{d\,v_c}{d\,t}$$

Pulse

$$v \quad = \quad v_R \quad + \quad v_C$$

$$i \quad = \quad i_R \quad = \quad i_C$$

Pulse

v_C

i_C

$$i_C = C \frac{d v_C}{d t}$$

ω ⬆ i_c ⬆ X_c ⬇

v_C

i_C

v_C
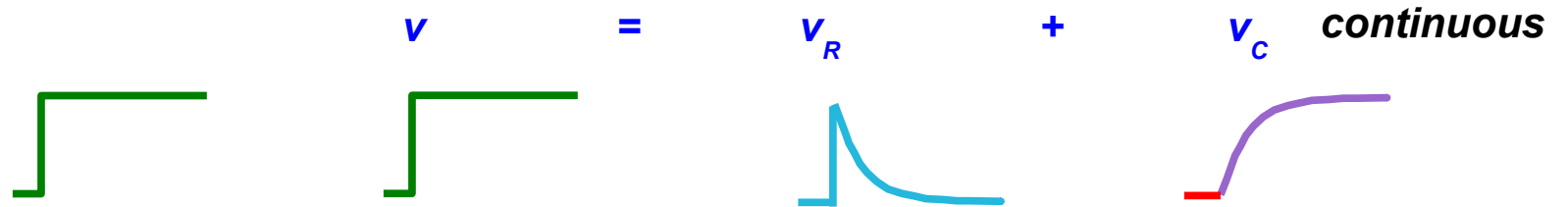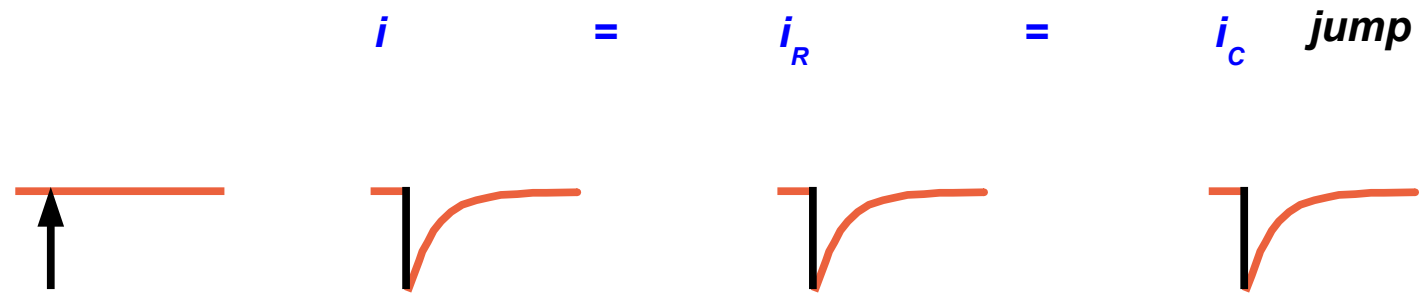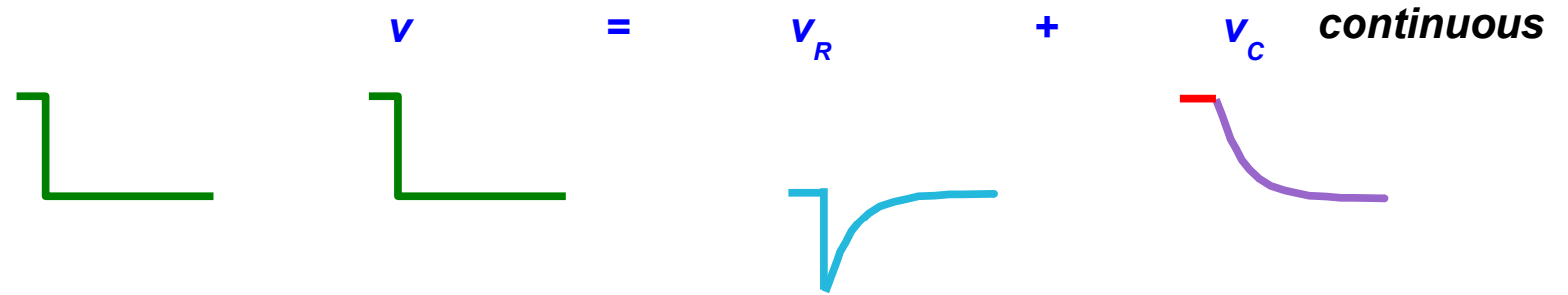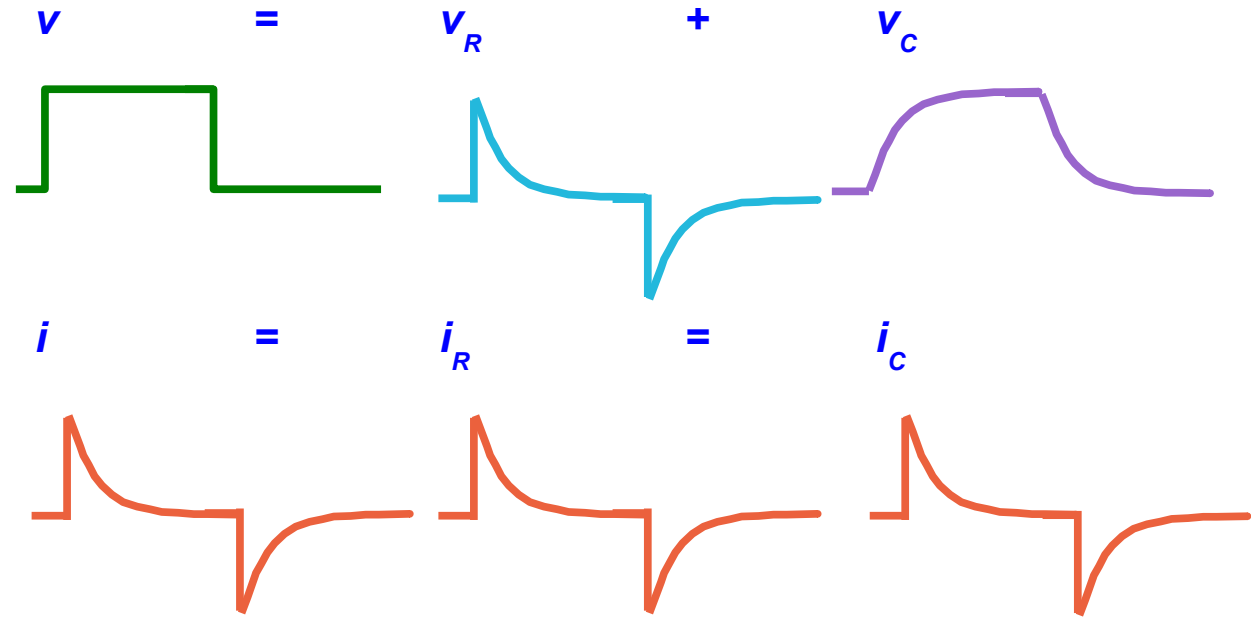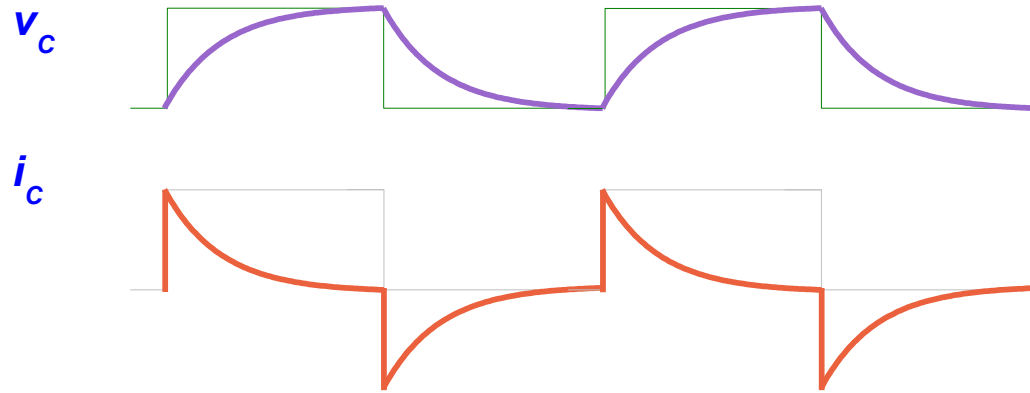
i_C
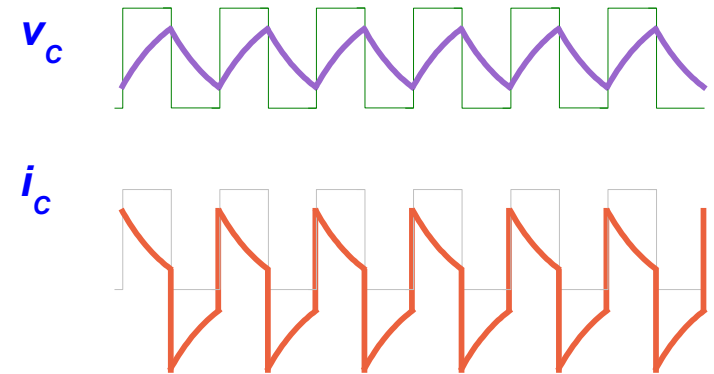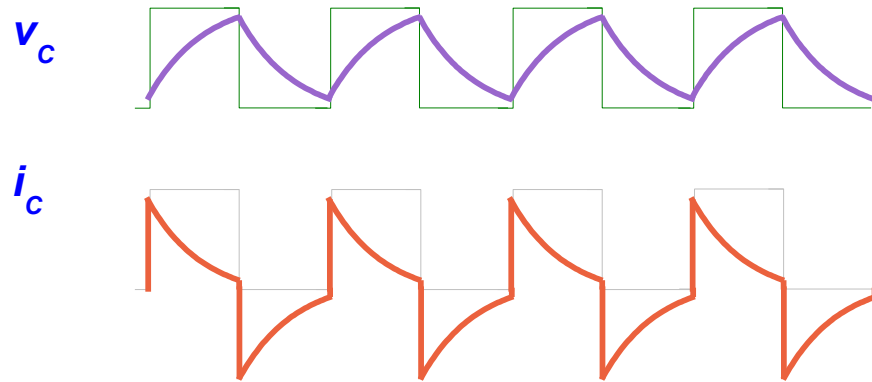
Phase Lags and Leads

References

[1] http://en.wikipedia.org/
[2] J.H. McClellan, et al., Signal Processing First, Pearson Prentice Hall, 2003