Ch 24 & 25: Circuits

Season 3 Episode 1 - *REBOUND*

In this episode of LARC Physics 3B, we're going to . . .

- Create a foundation to solve "Circuit" problems.

Lecture Review

Key Words: circuit, capacitance, voltage, current, resistance, Kirchhoff's Law, Ohm's Law, arranged in "series", arranged in "parallel", equivalent capacitance.

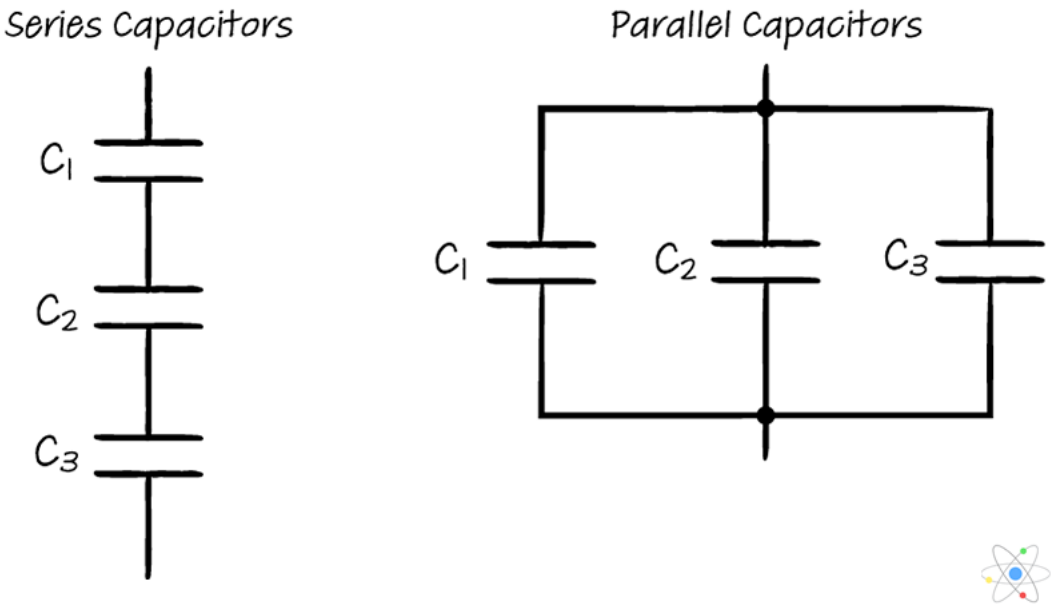
In today's session, we'll primarily focus on circuits involving only capacitors and some voltage source.

For capacitors arranged in series, the equivalent capacitance C_{eq} is given by

$$\frac{1}{C_{eq}} = \frac{1}{C_1} + \frac{1}{C_2} + \ldots + \frac{1}{C_n}$$

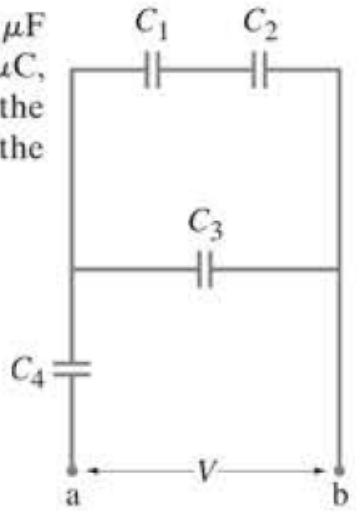
For capacitors arranged in parallel, the equivalent capacitance C_{eq} is given by

$$C_{eq} = C_1 + C_2 + \ldots + C_n$$



Breakout-Room Activity (Student - Student)

30. (II) Suppose in Fig. 24–23 that $C_1 = C_2 = C_3 = 16.0\,\mu\text{F}$ and $C_4 = 28.5\,\mu\text{F}$. If the charge on C_2 is $Q_2 = 12.4\,\mu\text{C}$, determine the charge on each of the other capacitors, the voltage across each capacitor, and the voltage V_{ab} across the entire combination.



Breakout-Room Activity (Student - Student)

33. (II) Suppose in Problem 32, Fig. 24–25, that $C_1 = C_3 = 8.0\,\mu\text{F}$, $C_2 = C_4 = 16\,\mu\text{F}$, and $Q_3 = 23\,\mu\text{C}$. Determine (*a*) the charge on each of the other capacitors, (*b*) the voltage across each capacitor, and (*c*) the voltage V_{ba} across the combination.