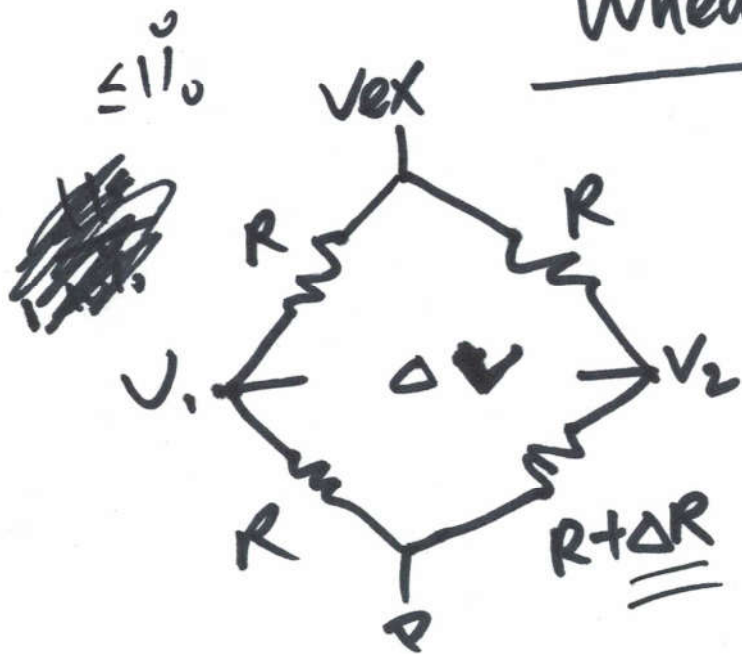
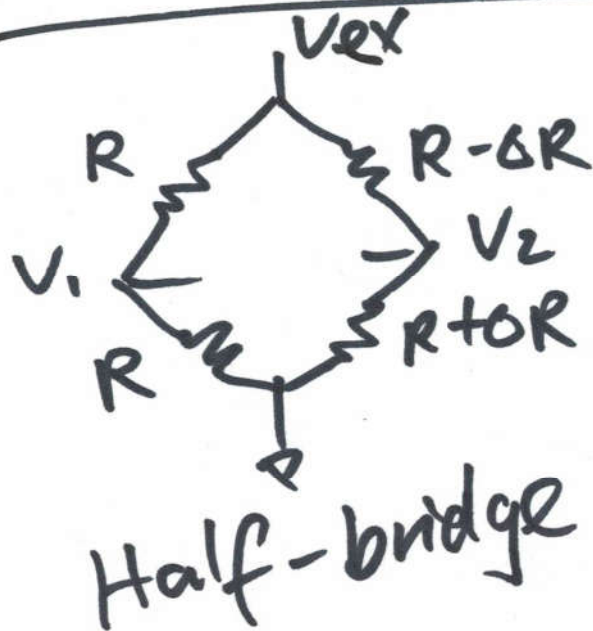


# Wheatstone Bridge



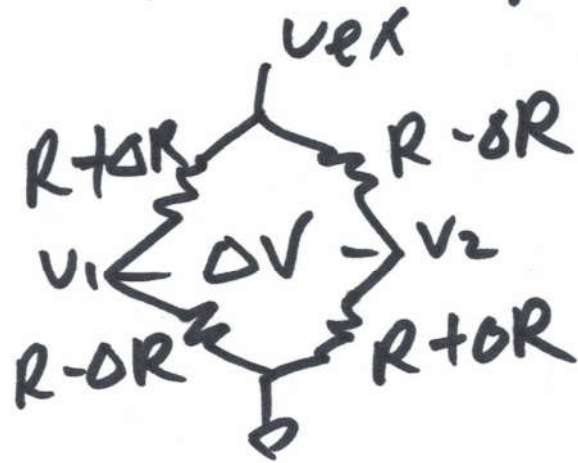
## Quarter Bridge

$$\begin{aligned} \Delta V &= V_2 - V_1 \\ &= V_{ex} \frac{R + \Delta R}{R + R + \Delta R} - V_{ex} \frac{1}{2} \\ &= V_{ex} \frac{2R + 2\Delta R - (2R + \Delta R)}{2(2R + \Delta R)} \\ &= V_{ex} \frac{\Delta R}{4R + 2\Delta R} \approx V_{ex} \frac{\Delta R}{4R} \end{aligned}$$

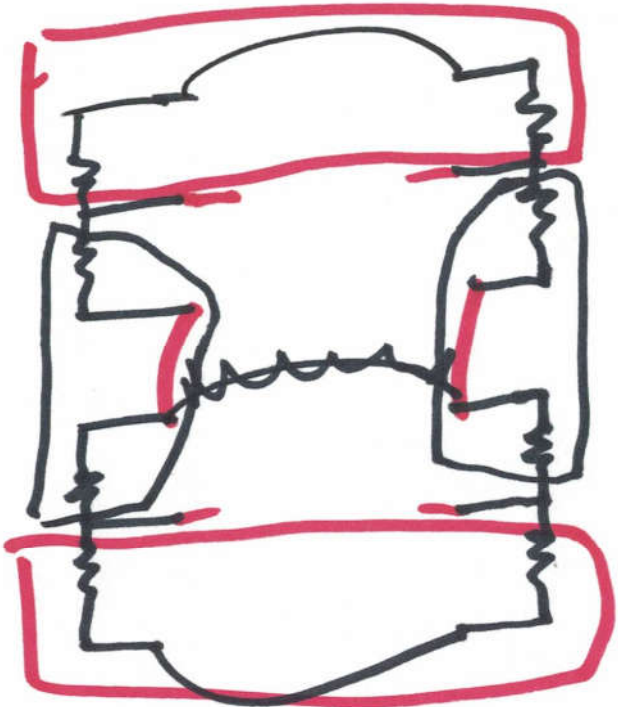


$$\begin{aligned} \Delta V &= V_2 - V_1 = V_{ex} \left( \frac{R + \Delta R}{2R} - \frac{1}{2} \right) \\ &= V_{ex} \left( \frac{R + \Delta R - R}{2R} \right) \\ &= V_{ex} \frac{\Delta R}{2R} \end{aligned}$$

# Full-Bridge



$$\begin{aligned}\Delta V &= V_2 - V_1 \\ &= V_{ex} \left( \frac{R + \Delta R}{2R} - \frac{R - \Delta R}{2R} \right) \\ &= V_{ex} \left( \frac{2\Delta R}{2R} \right) \\ &= V_{ex} \frac{\Delta R}{R}\end{aligned}$$



(2)