



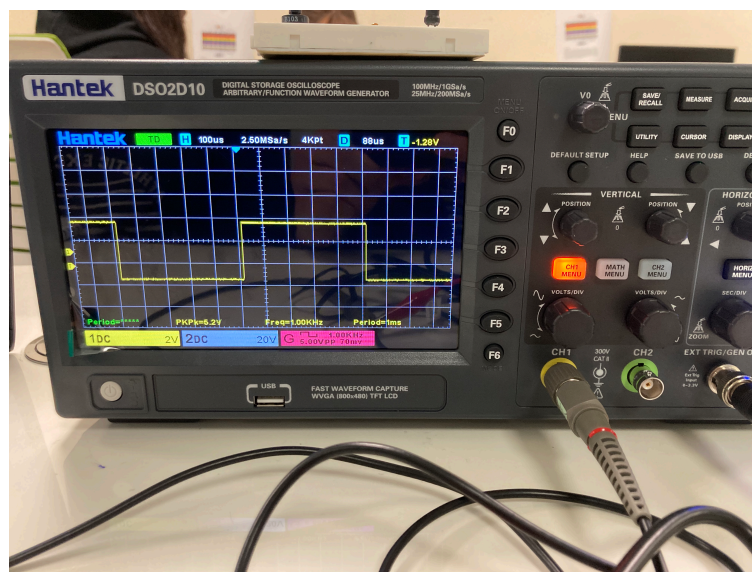
Digital version

ENGS152 Circuits Lab Section B

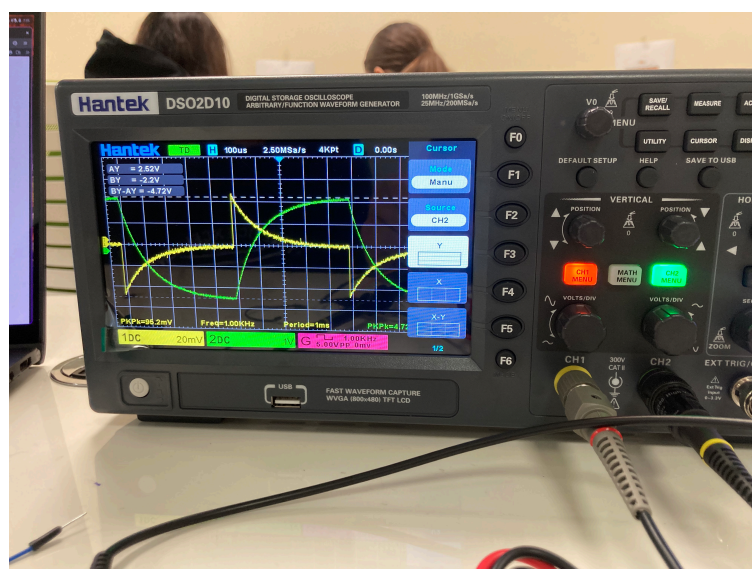
RC, RL and RLC circuit time domain analysis

Mher Saribekyan Nina Prazyan

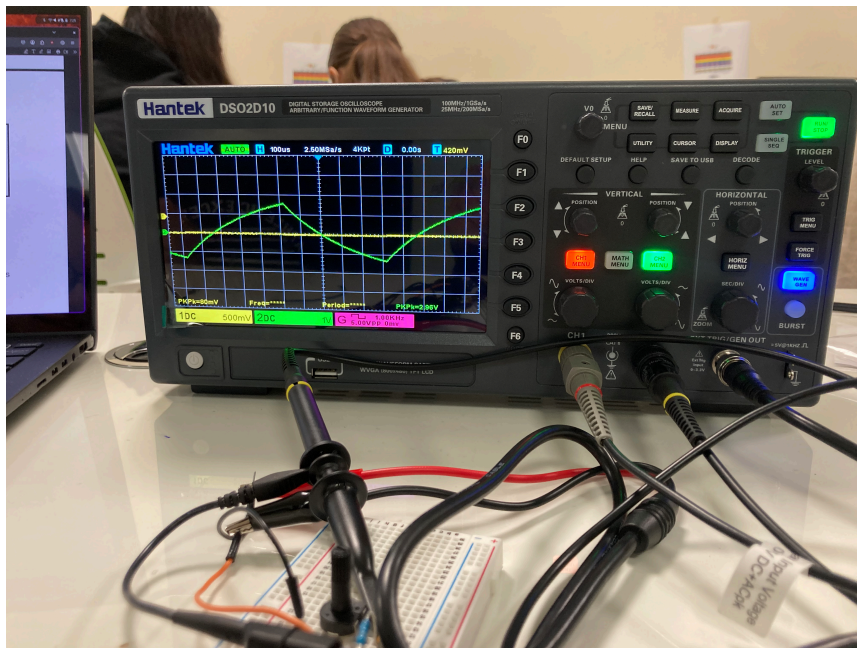
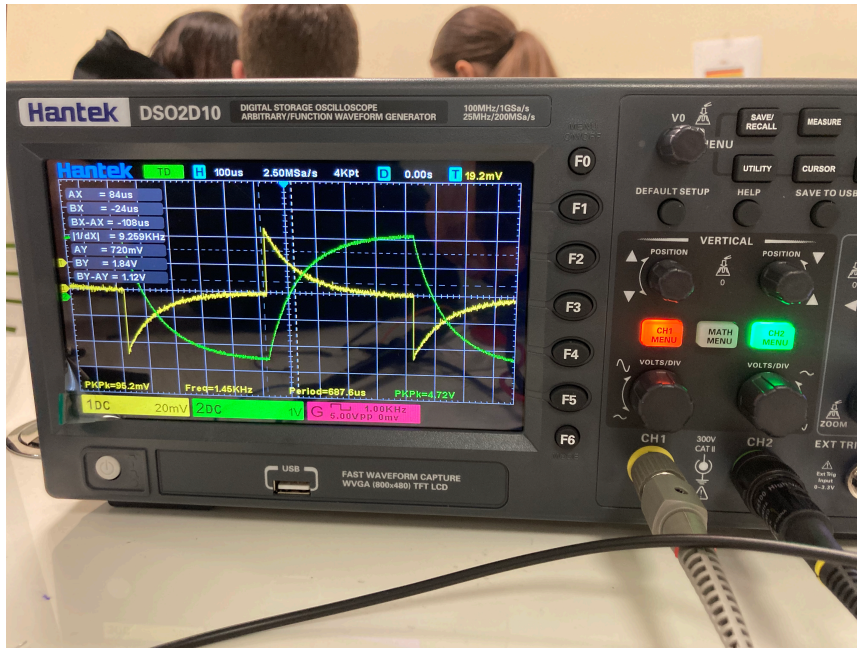
March 6, 2025



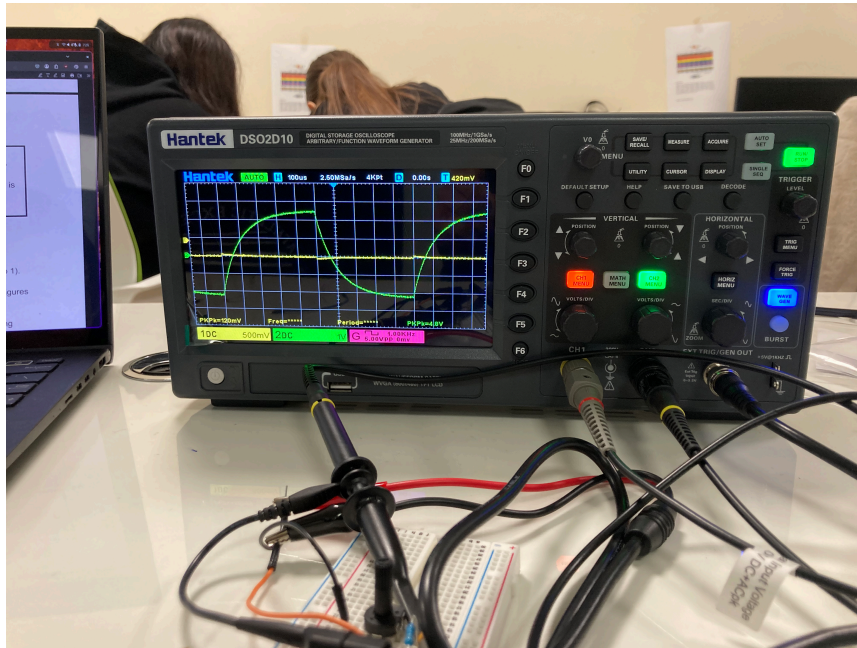
$$\tau = RC \Rightarrow R = \frac{\tau}{C} = \frac{0.1 \cdot 10^{-3}}{100 \cdot 10^{-9}} = 1k\Omega$$



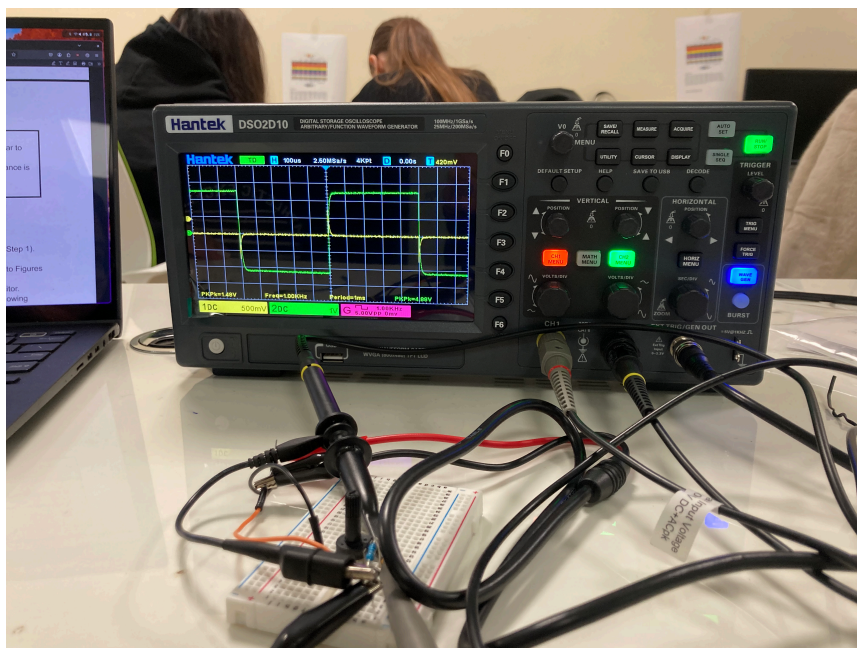
Peak to peak voltage is 4.72V. 63% gives around 0.7736V compared to ground. The time measured gives $108\mu S$, which matches our time constant.



High resistance, slow charge/discharge.

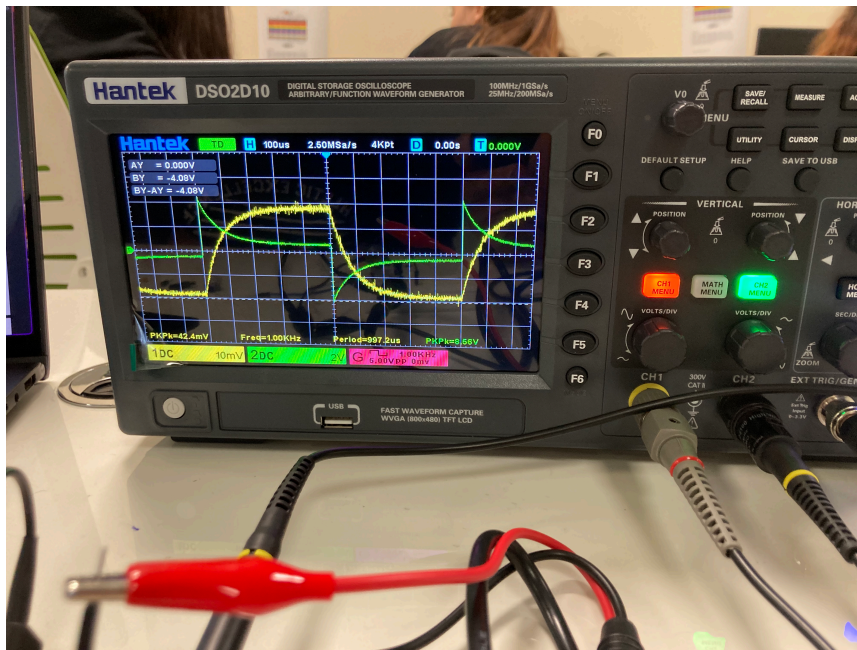
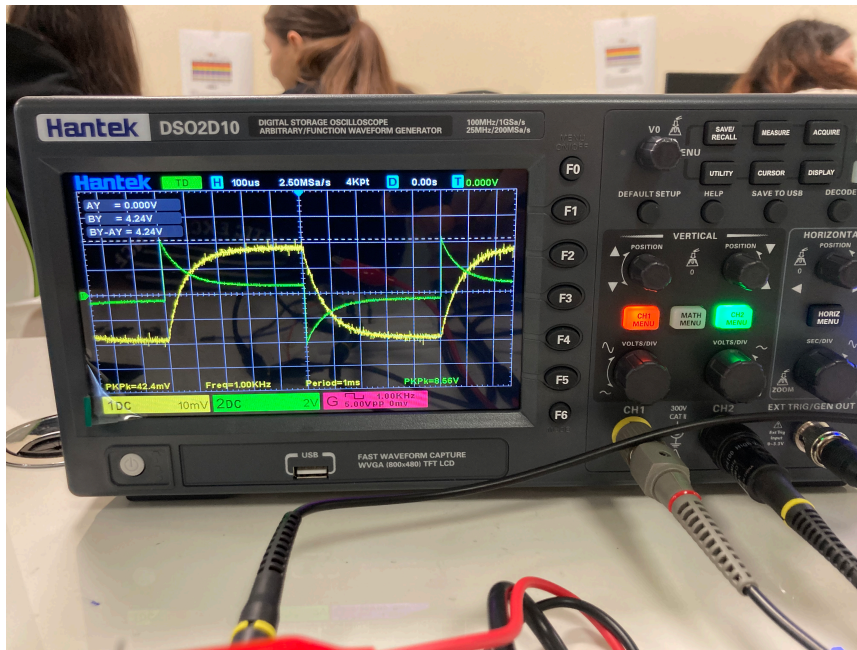


Medium resistance, medium charge/discharge.

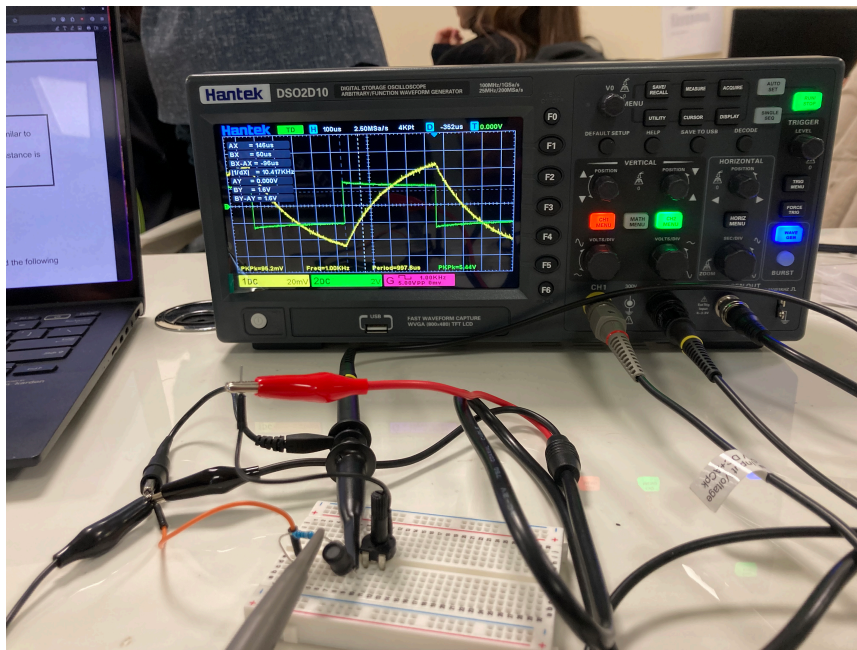
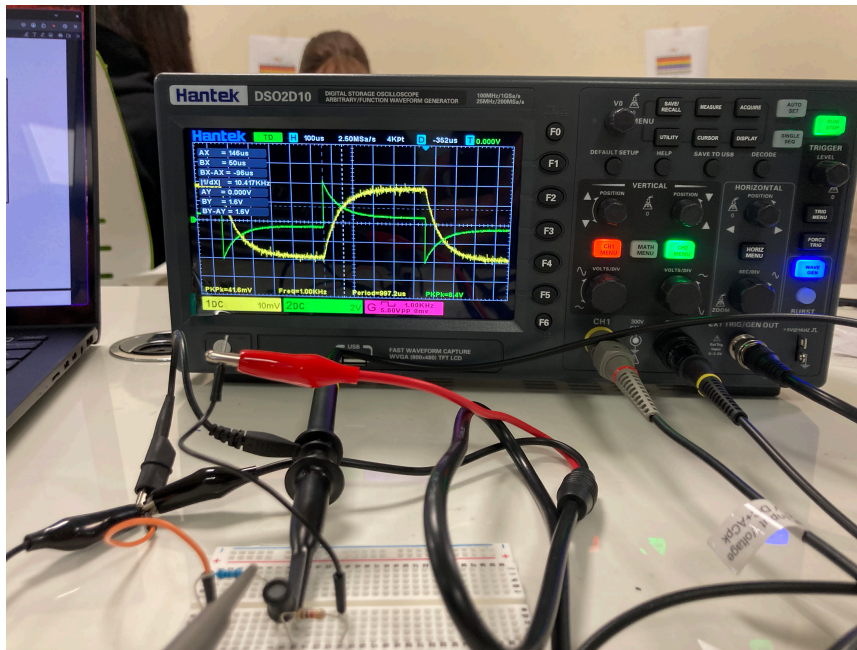


Low resistance, fast charge/discharge.

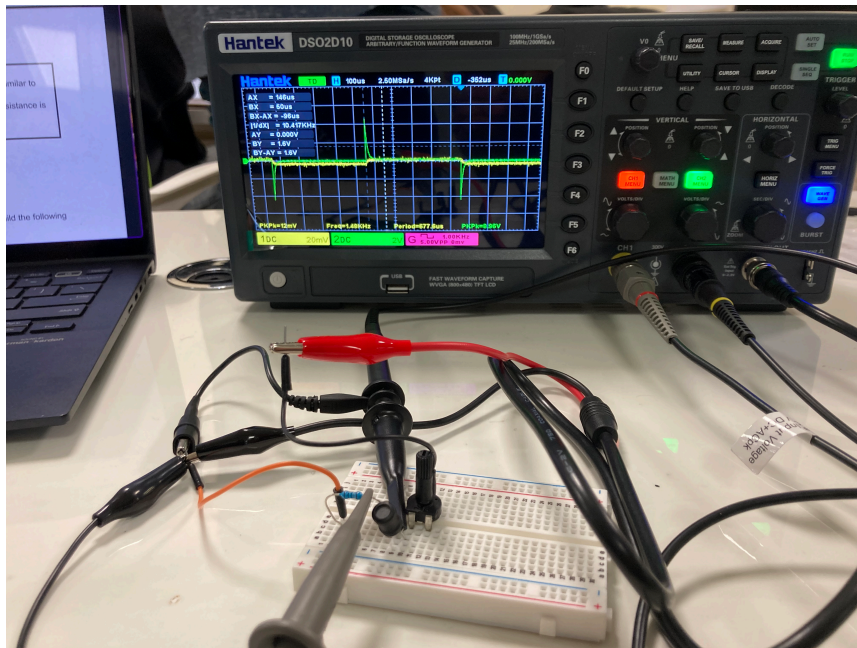
$$\tau = \frac{L}{R} \Rightarrow R = \frac{L}{\tau} = \frac{100 \cdot 10^{-3}}{0.1 \cdot 10^{-3}} = 1k\Omega$$



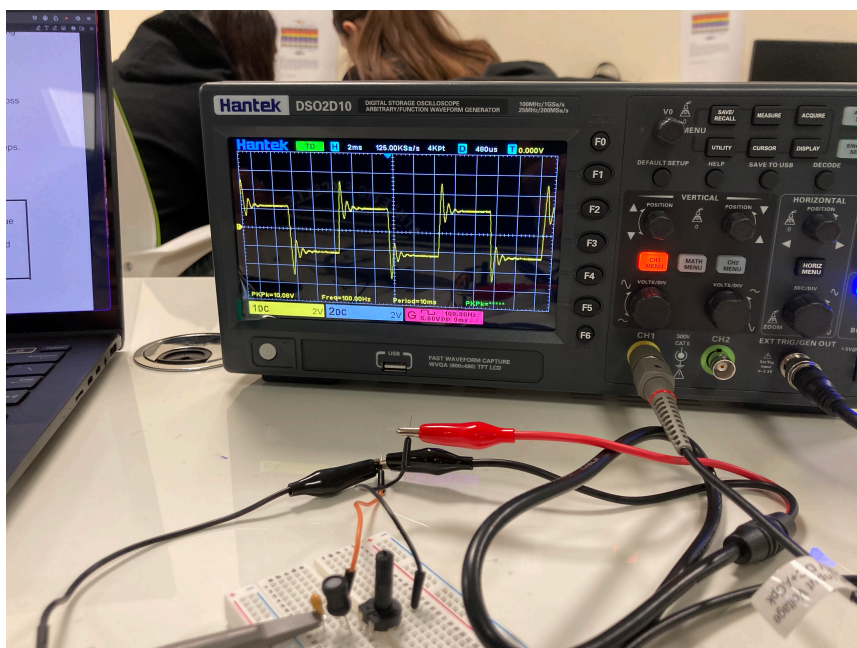
Peaks are at around $+4.24\text{V}$ and -4.08V . The 37% charge is at around 1.57V , which we measure at $96\mu\text{S}$.



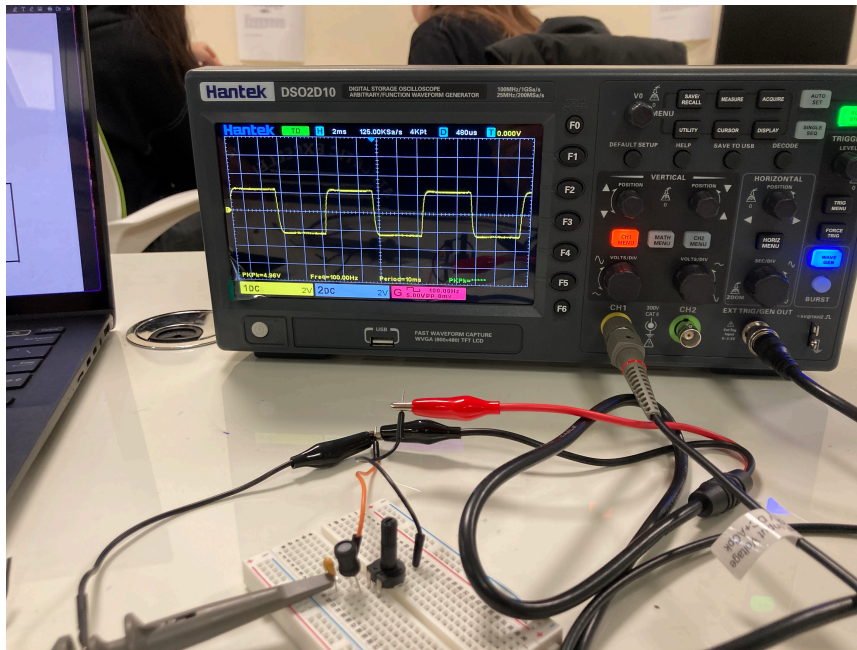
High resistance, slow charge/discharge.



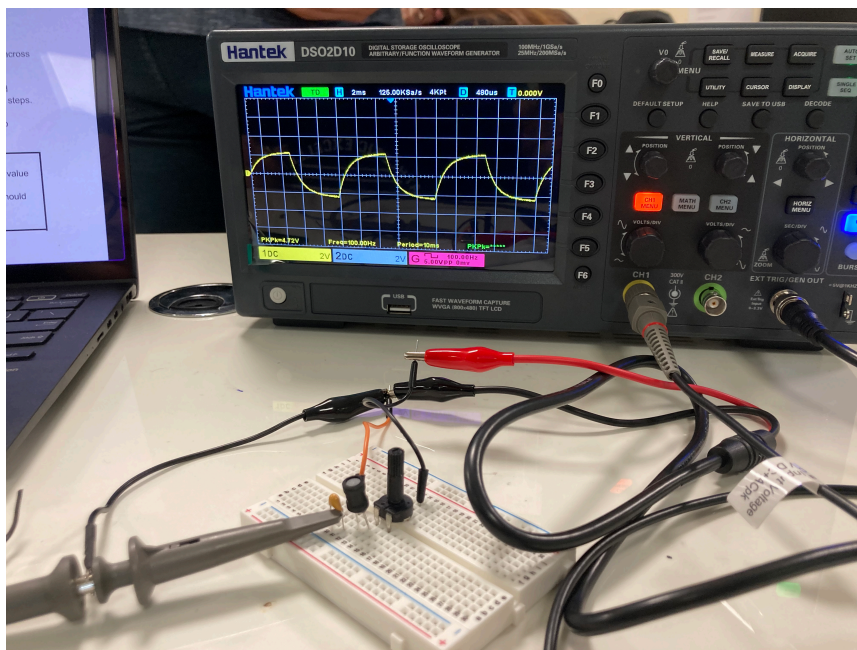
Low resistance, fast charge/discharge.



Underdamped RLC



Critically damped RLC



Overdamped RLC