**Annotated Bibliography**

**Aaron Ward**

**PHYS 690: RC Circuit**

Wilser, S., & MacIsaac, D. (n.d.). The Low Cost Ne Bulb and 9V Battery RC "Blinky" Relaxation Oscillator. Retrieved from Buffalo State Physics Publication.

This article provides a list of materials needed to create a neon relaxation oscillator, including purchasing information. It also includes a brief description of how the oscillator works through the charging of the capacitor.

Neon Relaxation Oscillator. (n.d.). In *Oberlin.edu*.

This article gives a list of materials to create a neon relaxation oscillator when using a power source. In addition to this information also includes a picture of the apparatus, a circuit diagram and graph which shows the voltage across the neon bulb as the capacitor builds up charge and then discharges.

Smith, J. (2010, January 1). Relaxation Oscillator. In *Clifton Laboratories*. Retrieved September 19, 2015, from www.cliftonlaboratories.com/relaxation\_oscillator.htm

As well as background information, this article provides a more in depth graphical breakdown of the relaxation oscillator and its behavior.

Relaxation Oscillator. (n.d.). In *Wikipedia*. Retrieved September 14, 2015.

This source provides multiple visual representations such as diagrams of the circuit, pictures, and graphical representations of the oscillators discharge.

Pearson-Anson effect. (n.d.). In *Wikipedia*. Retrieved September 14, 2015.

Caplan, G. M. (2008, January). Simple DC Power Supply [Electronic version]. *The Physics Teacher*, *46*, 57. doi:10.1119/1.2824005

This article gives a quick breakdown of how to create alternative power source when a conventional DC power source is not available.

Wood, H. T. (1993, September). The RC circuit-A multipurpose laboratory experiment [Electronic version]. *The Physics Teacher*, *31*, 372-373. doi:10.1119/1.2343803

Although this is an older article, it provides a brief explanation of the RC-Circuit as well as a circuit diagram and a graph showing the Current vs. Time for specifc section of the parallel circuit.

Gubanski, Z. (1971, February). Apparatus For Teaching Physics: Capacitance by Relaxation Oscillations [Electronic version]. *The Physics Teacher*, *9*, 104. doi:10.1119/1.2351597

Despite being from 1971 this article might have the best graphical representation of the discharge of the capacitor as a repeating pattern.

Steinberg, M. S. (n.d.). Capacitor-Aided System for Teaching and Learning Electricity. In *Electricity Visualized: The CASTLE Project*.

The CASTLE curriculum offers many different representation and justifications to use capacitors to study current electricity.

Physical Setting/Physics: Core Curriculum.(n.d.) www.emsc.nysed.gov. Retrieved October 1, 2015

The NYS Curriculum does not address capacitors specifically, but there are standards within it that could be reinforced by and RC circuit.

Specifically:

4.1n- A circuit is a closed path in which a current can exist.

4.1o- Circuit components may be connected in series or in parallel. Schematic diagrams are used to represent circuits and circuit elements.