

# Abstract of Kelvin Water Dropper

Edward Rossi Banfe (Princeton High School & Engineering Projects In Community Service, USA),  
ebanfe@princetonk12.org

## *Abstract*

My poster is a demonstration of the Kelvin Water Dropper, invented by William Thomson in 1867. The goal of my project is to educate all those at IEEE about the basics of electrostatic induction through the Water Dropper, like William Thomson did. The poster will include a diagram of how the inductors and receivers work, will explain how a spark is generated from the flow of water, will display a working model of a Kelvin Water Dropper, and a laminated copy of the original paper by William Thomson for a demonstration. The Kelvin Water Dropper works via electrostatic induction, in which opposite charges accumulate in each side of the Dropper until a spark is formed, connecting the two sides for a brief moment and completing a circuit created by the built up positive and negative charges. After the spark occurs, the reaction restarts and the positive and negative charges begin to accumulate again. The charges are collected through the two hanging cans (inductors) and are stored in the cans diagonal to them (receivers). The receivers will pull water with an opposite charge to them and deposit it in the can directly below, causing more charge to be built up as the reaction continues and eventually stops to create a spark. My expertise regarding this project is adequate for what I will be presenting, as it is the project I have been learning and perfecting for last six months of my time at Princeton University's Engineering Projects In Community Service Joseph Henry Division (EPICS), led by Professor Michael Littman. In EPICS we specialize in projects relating to the history of electrical engineering, electromagnetism, and physics. We conduct outreach programs at local schools, libraries, and community events in the Central New Jersey area. In addition to my participation in EPICS, I am a student at Princeton High School in Princeton, New Jersey, currently at grade 10. I also volunteer for the Julia Robinson Math Festival which in Central New Jersey.