

Direct Current Driven by A Cathode Ray Tube

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Abstract

In this study, we found that a cathode-ray tube can drive a circuit containing a capacitor to generate a direct current. Furthermore, the system requires no external power input.

According to the electrostatic field loop theorem, the path integral of electrostatic field strength along any closed path is always zero. For a non-closed path, however, this path integral is non-zero. Let us examine the circuit shown in Figure 1. A pair of anode and cathode electrodes is mounted outside the vacuum tube, establishing an electric field within the tube. An emitter is installed inside the tube. Electrons move from the emitter to a Faraday cup at the end of the vacuum tube. Electrons accumulate at the negative electrode, while positive charges accumulate at the positive electrode. These two electrodes form a parallel-plate capacitor. Charges on the electrodes can be transferred to air molecules and diffuse to the other side. The current flowing through the load can be converted into output power. Since no current flows through the anode and cathode themselves, the input power is zero. A prototype has been constructed, and its proper operation has been verified.

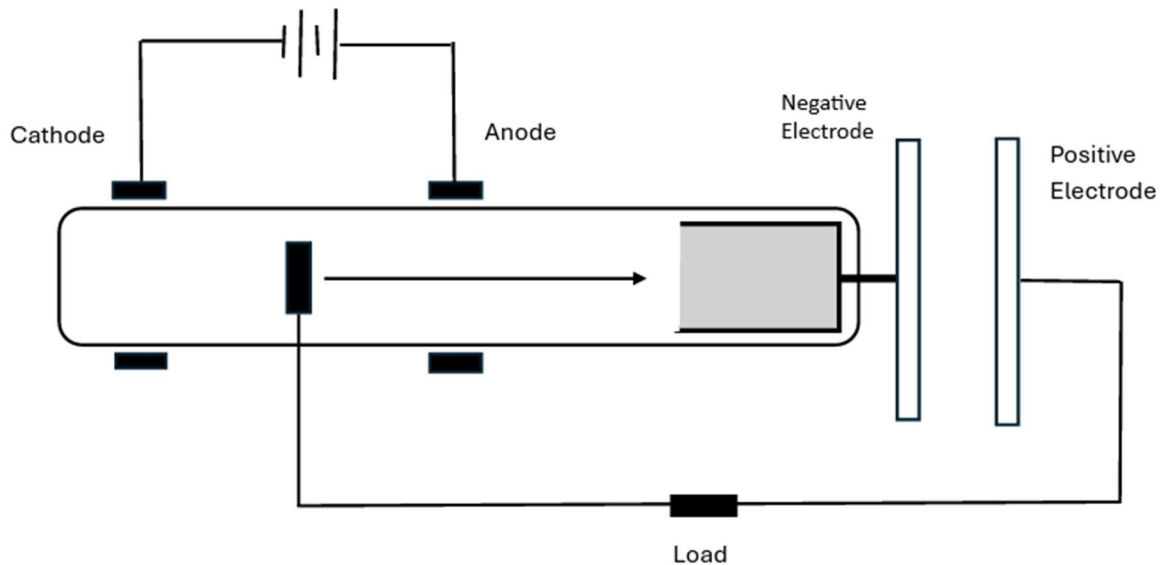


Figure 1