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Electrostatic Power Amplification

Our project involves an evolving inquiry of energy amplification of plasma strands traveling through air. We used a Tesla coil as a means of experimentation to test our hypothesis that discharges do gain energy from traveling through the air. Our initial experiments employed a high resistance attenuator probe that we constructed and terminated at an oscilloscope in order to assess the energy content of the sparks. These experiments, when analyzed using probability theory, indicated that our data were normally distributed. If this were to be incorrect, power amplification through electrostatics would be impractical due to power fluctuations. After mathematically proving the normal distribution of our data, we then devised a way of measuring energy augmentation by varying the distances at which we recorded energy content. Numerous high precision instruments (e.g. oscilloscope) were used to collect our data as accurate as possible, and enable us to compensate for possible discrepancies. Several significant suggestions arose from these experiments, including that sparks do gain energy, and there is an optimum distance at which this energy augmentation is maximized. The implications of these findings are quite significant as they suggest the ability to increase efficiency in power production; however, in order to be rigorous, it was important to consider all possible sources of error that might confound our results, hence the need for precision instruments. Considering the contemporary need for effective energy supply, the suggestions made by our data are most certainly significant and noteworthy.