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STUDY OF THE CORONA EFFECT : APPLICATION TO THE IONOCRAFT

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An ionocraft is an asymmetrical capacitor that uses high voltage (> 20 kV) to produce thrust in the air without requiring any combustion or moving parts. The high voltage ionizes the gas present between the two electrodes by corona effect and moves this ionized gas in a direction defined by the shape of the electrodes. The principle of ionic Wind propulsion with corona-generated charged particles is the Biefeld-Brown effect discovered by Thomas Townsend Brown in 1928.
This paper presents a parametric study on the corona effect. The empirical Peek law predicts the threshold appearance of the corona effect on a wire. This law is studied and compared to experimental measurements. These results allow an optimistic design of an ionocraft (weight = 5 g) working in the range of 20 kV and 1 µA.

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