

Harnessing corona wind for electrostatic motors

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Abstract— Electrohydrodynamic (EHD) flow generated at the tip of sharp metal pins was used to induce rotational motion. The pins were set on a planar rotor placed in an intense electric field so that the generated thrust to produce torque and spin the rotor. Simple designs were investigated. Voltages up to 60 kV (positive and negative polarity) were used. The motion of the rotor was studied using a Photron High speed camera. Optimization of the rotors was only partially performed and much higher rotational speeds are likely achievable. Scaling up the number of the planar rotors/ EHD generators in a cylindrical like shape could potentially achieve significant torque to be used for active loads. As the efficiency of electric energy into mechanical energy/EHD flow is high, efficient motors can potentially be built.