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Electrodynamic Principles for Generation and Wireless Transfer of Energy

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Abstract : An electrical discharge in the air induces an electromagnetic (EM) wave capable of wireless transfer, reception, and conversion back into electrical discharge at a distant location. Following Norton's ground wave principles, EM wave radiation (EMR) runs parallel to the Earth's surface. Energy in an EMR wave can move through the air and be focused to create a spark at a distant location, focused by a receiver to generate a local electrical discharge. This local discharge can be amplified and stored but also has the propensity to initiate another EMR wave. In addition to typical EM waves, lightning is also associated with atmospheric events, trans-ionospheric pulse pairs, the most powerful natural EMR signal on the planet. With each lightning strike, regardless of global position, it generates naturally occurring pulse-pairs that are emitted towards space within a narrow cone. An EMR wave can self-propagate, travel at the speed of light, and, if polarized, contain vector properties. If this reflective pulse could be directed by design through structures that have increased probabilities for lighting strikes, it could theoretically travel near the surface of the Earth at light speed towards a selected receiver for local transformation into electrical energy. Through research, there are several influencing parameters that could be modified to model, test, and increase the potential for adopting this technology towards the goal of developing a global grid that utilizes natural sources of energy.

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