

Section 1: Background Information

1.0 Introduction

Because of the novel nature of the invention and its use of a unified field theory of electrodynamics, the active vacuum and local curvatures of spacetime participate and interact with the system in a manner which cannot be assumed to be a net zero. Indeed, the major object of the invention is precisely to (i) engineer and alter the active vacuum environment, (ii) engineer and alter the local curvatures of spacetime, and (iii) take advantage of the ensuing energy exchange between these active environments and the system, in order to provide a system far from equilibrium in said active environments, with the system freely receiving and utilizing excess energy from them, both in conventional positive energy form and unconventional negative energy form.

The operation of the invention is not describable in terms of just conventional electrical engineering and classical electrodynamics alone. Instead, the physics of the active vacuum and its interactions with charged matter are involved, as well as the physics of curved spacetime and its interactions with charged matter.

The invention also exploits a unique discovery: Using sharp gradients and sharp pulses, the invention stimulates receipt of *negative electromagnetic (EM) energy* from the vacuum. Further, the only limit on how much negative EM energy can be stimulated and received in the system is the sharpness and peak intensity of the gradient, plus the frequency of producing the gradient, plus the ability of the circuitry to catch and store the negative energy in capacitors, thereby also converting the energy into positive energy. In stimulating the negative energy inflow into the system from the sharply perturbed vacuum, a novel way of utilizing the Dirac Sea is stimulated and employed.

Some special characteristics of negative energy are given, as well as some of the special interactions in normal circuitry. We have nominated negative energy as also what astrophysicists call “dark energy” and sometimes “quintessence” and explained why {1}. Every university teaches the Poynting energy flow theory, which only considers a minute fraction of the energy flow generated through space outside the circuit conductors—specifically, the fraction that actually gets diverged into the conductors to potentialize the Drude electron gas. When the huge *additional* Heaviside component of energy flow in curl form—present but *nondiverged*, and arbitrarily discarded by Lorentz—is accounted, then the EM negative (“dark”) energy produced in sharp astrophysical gradients is sufficient to cause the widespread antigravity that is accelerating the expansion of the universe. It is odd that astrophysicists are looking as deeply into the early universe in the sky as can be seen, intensely searching for dark energy—when it can readily be found right on the bench and used in any circuit with slight modifications, by utilizing the novel teachings of the present invention.