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Doubly-Periodic Processing in Particle Accelerators and Fusion Reactors

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Abstract

A Blackbox with chaotic RC-circuit or quadratic amplitude amplifier is proposed to interpose a toroidal configuration. Matter is claimed to be newly created by a chaotic behavior of generated fields with binary trees of nuclear fission and fusion. In the generated plasma a cooling effect is predicted by the presence of dark matter.

Keywords

Doubly-Periodic Processing, Breathing Modes, Chaotic RC-Circuit, Toroidal Configuration, Accelerator, Fusion Reactor

1. Introduction

Chaotic bifurcating flow lines allow a potential flow without collisions. In a fractal picture the flow is described by a quadratic, linear symbolic map γ. If the density of lines increases periodic structures ν_{Sh} appear for the real interval. A ν_{Sh} sequence depends on ν_{Sh} sequence. This self-similar behavior superposes a line and its logarithmic zoom as a feasible, optimal regulator with high information density as an origin of a Lagrangian. Superposed optimal lines as circles explain the Huygens principle. A further increase due to stable orbiting γ laps creates binary invariants which are felt as masses and current densities of charges within an otherwise holomorphic depictable environment around its absolute zeros. This one-dimensional picture is viewed as a doubly-periodic time-thermal processing for an open system. The common one-periodic processing of physical fields in closed systems uses periodic boundary conditions. Real eigenvalues allow for calibrating zeros. Complex eigenvalues arise as a dissipative structure. Within a quadratic map a complex eigenvalue of a linear equation can be treated as a simultaneous change to another eigenvector, *i.e.* to another system which does not conserve

energy locally [1].

2. Accelerators and Fusion Reactors

Particle accelerators and fusion reactors (AF) in linear or toroidal (donut-shaped) geometry use toroidal magnetic solenoids to accelerate and confine particle clouds. Kinetic energy of a turbulent flow in a plasma is raised by Lorentz forces on ionized particles. The achieved temperature is proportional to a mean vacuum energy density $\mathcal{F}$. Technologically Maxwell equations $\partial_\nu F_{\mu\nu} = j_\mu$ and $\partial_\nu F^*_{\mu\nu} = 0$ is applied for one-periodic fields $F_{\mu\nu}(x_\mu)$ by consecutive orbits k where time/energy/temperature $\mathcal{F}^k t \to t$. It is supposed that an absolute zero of energy exists which is shifted by zero-point oscillations.

3. Doubly-Periodic Accelerator and Fusion Reactor

For a complex Lagrangian the iterated curvature/energy density z is capable to have negative values for finite z which yields least squares solutions. Near these local minima quasi-stationary doubly-periodic states exist. It is claimed that a non-turbulent potential flow in the vicinity of zeros of a holomorphic state exhibits a quadratic behavior of newly created rest masses $0 = \delta m \delta m'$. A positive rest mass ρ_r is compensated by negative dark energy ρ_{dark} which is felt as a cooling effect. Doubly-periodic breathing modes appear by a toroidal quadratic feedback amplitude. Negative values ρ_{dark} are responsible for the local lowering of vacuum energy densities

$$\rho_{vac} < \rho_{vac}(GR) \simeq 10^{-50\ldots-200}\rho_{vac}(QS) \simeq \rho_{vac}(EM) \tag{1}$$

below energy densities in general relativity, quantum statistics, electrodynamics $\rho_{vac}(GR)$, $\rho_{vac}(QS)$, $\rho_{vac}(EM)$, respectively [2] [3]. A doubly-periodic accelerator and fusion reactor (DPAF) can be based on chaotic toroidal electromagnetic fields which can be generated by a quadratic feedback amplitude. Existing chaotic RC circuits or a quadratic feedback amplitude amplifier speak for the feasibility of DPAF. A configuration in **Figure 1** is claimed to induce a bifurcating branching structure of newly created matter as doubly-periodic unified fields. Increasing the density of bifurcation lines DPAF traverses a quasi-ergodic bifurcating branching structure of newly created matter where binary trees of nuclear fission and fusion are viewed as two opposite directions. However, in distinction to fusion and fission zero states $0 = \delta m \delta m'$ are newly created matter.

4. Black Box Generator

A black box RC-circuit generator or a quadratic amplitude amplifier would be more optimal than AF generator $\mathcal{F}^k t \leftarrow t$ which requires a large number of orbits consuming much energy. The electromagnetic toroidal confinement of a chaotic generator creates fluctuating bifurcating lines changing simultaneously both minor and major radius of the torus. Field energy can already be estimated for the quadratic iteration. Generator field strength $F_{\mu\nu} = Rez_k$ variable z extends to

up-to five-dimensional $SU(5)$ rotations for cardioids. The Poynting vector with parameter $\mathcal{F}=\frac{1}{4}\left(\boldsymbol{E}^2-\boldsymbol{B}^2\right)$, $\mathcal{G}=\boldsymbol{EB}$, where

$$\mathcal{F}=\frac{1}{2}Re\left(c-z_{k+1}\right),\mathcal{G}=\frac{1}{2}Im\left(c-z_{k+1}\right),z\to z=\sqrt{\mathcal{F}+i\mathcal{G}}\simeq\boldsymbol{E}+i\boldsymbol{B} \tag{2}$$

obeys a renormalized iterated quartic relation.

$$F_{\mu\nu}^4+2\mathcal{F}F_{\mu\nu}^2-\mathcal{G}^2=0 \tag{3}$$

Doubly-periodic iterates of time t and temperature T perform complex one-dimensional oscillations which are a pulsating swell and shrink for both t and T. A black box chaotic RC-oscillator or a quadratic amplitude amplifier governs the electromagnetic torus. It is claimed to induce a breathing bifurcating branching structure of newly created matter pairs $\delta m\delta m'=0$. Real values are compensated by complex values giving an invariant product of local count rate j_{local} and energy $E_{local}\simeq\delta m$. Like for livings being an initial low respiratory frequency and high-frequency screaming of breathing changes over to stable count rates and higher frequencies. Within a fractal picture this is equivalent to an initial cosmic microwave background of lower energy and higher count rate which is replaced by ultra-low count rates and ultra-high energies.

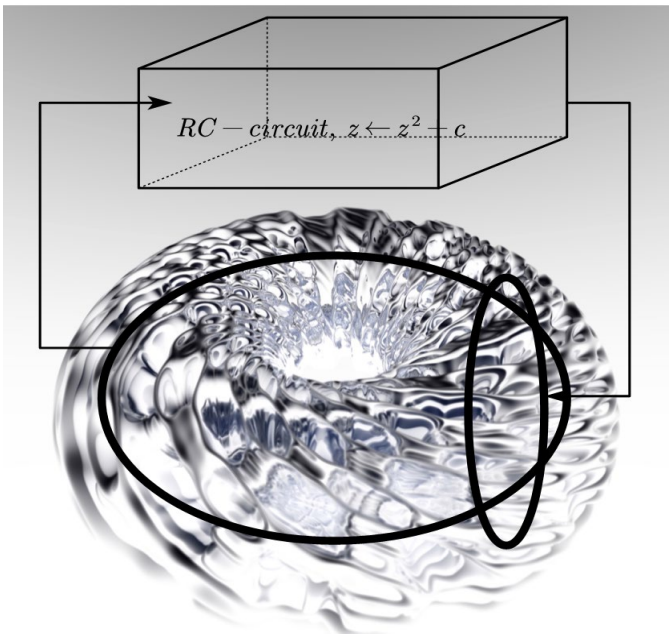

Figure 1. Black Box superimposed on the toroidal configuration of an existing plasma. Photo template from Rick Rothenberg/Unsplash(edited).

Energy values δm scale with the area on a closed contour for a wide range of scaled local densities ρ_{loc}. Independent on atmospheric ρ_{loc} energies E_{local} up to the detection limit (GZK-cutoff) should be achievable by a minimal amount of input energy by the DPAF.

5. Claim

A Blackbox with chaotic RC-circuit or quadratic amplitude amplifier interposed in a toroidal configuration is claimed to be capable of creating newly generated matter as binary trees of nuclear fission and fusion. Period-doubling is treated as doubly periodic addition on fluctuating curves. For high densities of bifurcation lines newly created matter is expected as a quadratic law $\delta m \delta m' = 0$ in the vicinity of zeros of a holomorphic atmosphere within the torus. Binary trees of nuclear fission and fusion are viewed as two opposite directions of a quasi-ergodic behavior transmitted by a chaotic quadratic map of the electromagnetic field amplitude. In AF orbiting one has $\mathcal{F}^k z \to z$. A feedback transmitted quadratic amplitude $z_{k+1} \leftarrow z_k^2 + c$ achieves higher energies for a given number of orbits k. Whereas AF yields a single complex periodic structure $e^{i\mathcal{F}t}$ DPAF splits into various valleys of the complex Lagrangian. Algorithmically the difference is given by 2^{2^k} instead of $\mathcal{F}^{2k}$. For a given energy power consumption is drastically reduced. In DPAF higher final rest energy densities ρ_r are achievable than in AF. Whereas ion energy density ρ_{ion} of created matter is negligible, dark matter is a negative phantom energy which compensates ρ_r. In distinction to the high-temperature AF-plasma DPAF phantom energy ρ_{dark} induces a cooling effect. However, AF-high count rates are compared to low count rates of DPAF events.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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