Cosmic Background

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ABSTRACT

A possibility is that in cosmic background, primordial photon lattice where emerges a way to mass conservation, a photon was disturbed to create a spin then lead to its neighbors consecutively avalanching -- CMB -- into this a small ripple, which inverse spin directions pointing to a world was made of matter or antimatter whichever is parity violation; now cosmos was like an expanding hole -- an isotropic gravity field -- in photon lattice that influenced on everything, so inertia will be partly clarified.

Keywords: CMB, parity, inertia, mass conservation.

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I. INTRODUCTION

Cosmic microwave background radiation [1] (CMB or CMBR) is critical to any proposed model of universe. Notably, background in above term that its location will alter in different cosmic models. Among them big bang [2] and steady state [3] are prevailing that CMB in both are described as:

afterglow [4]

and

scattered star light from distant galaxies [5],

respectively. Obviously, a cosmic environment has not been involved by them. Hence, here a model called “small ripple” attempts to add it, and then will naturally meet with 4 phenomena: CMB, parity [6], inertia [7], and mass conservation, only which CMB is a direct and detectable messenger probably comes from cosmic outside – background.

II. COSMOS

A. Cosmic Background and Start

In the late-1980s, when the author first learned about CMB with anisotropy, a response was it originating from outside universe, because earth cannot be in the centre of universe. Cosmic background, an infinite photon lattice (PL) roughly akin to a diamond crystal lattice at a dynamic balance, as Epicurus wrote

*the totality of things was always such as it
is now, and always will be* [8],

provided a basis for mass conservation law, known as mass, can neither be created nor destroyed, which previous was empirical or wanting a root. Cosmos was imagined in PL

that one photon was excited to create a spin then result in nearby

photon avalanching [9]

into this a small ripple, after that to expand. Put differently, universe was like a small ripple in a photon sea (Table 1 and Fig. 1).

TABLE I: DISPARITY OF PHOTON LATTICE AND UNIVERSE

	Photon Lattice	Universe
space, mass, field	infinite, homogeneous	finite, heterogeneous
time, motion, direction	without	with
parity	conservation	nonconservation

B. Cosmic Spin

In Fig. 1 universe is an oblate – an ideal black body corresponding to CMB radiation spectrum, whereas CMB has given a snapshot approximately flat [10]. A possible reason is that CMB photon rains can stir a small ripple to form a vortex, early universe quite similar to

vortex formation in a stirred Bose-Einstein condensate [11]

and

tiny quantum tornadoes [12],

i.e., cosmos may own a spin,

its polarization may be rotated by exotic effects [13],

that its spin speed could affect its sphere shape. Furthermore,

earth velocity relative to CMB [14]

(a rest frame, perhaps identical to PL, an outer reference frame)

was ~ 600 km/s,

as

we can see that all of our measurements are in significant disagreement with the “no velocity” hypothesis [15].

In other words, due to cosmic spin, CMB photons

in the Earth's direction of motion appears blueshifted and hence hotter, while radiation on the opposite side of the sky is redshifted and colder [16].

C. Cosmic Density

Owing to hotter-colder CMB rains, decreasing mass and volume of PL will equal to increasing ones of universe that

cosmic average mass density [17] $\sim 4.5 \times 10^{-31} \text{ g/cm}^3$ also roughly was of PL, implying that here, however, disagrees with big bang that the density will be lower as time went on, as

eternal inflation in fact cannot be eternal [18],

if not have supply. Also, this supply can fill a gap of steady state that in order to keep invariant mass density how to create new matters in cosmic inflation [19]. Furthermore, cosmic inflation is accelerating [20], if so, it will be another obstacle to big bang. Clearly, small ripple possesses enough flexible to fit in with it, and illustrated that cosmos is of “sustainable development”.

Fig. 1. Universe bathing in photon rains.

CMB [1] rains could carry mass into cosmic expanding vortex (a referable speed [14] $\sim 600 \text{ km/s}$; hot and cold photons in dipoles [16], Doppler effect) that it was of matter or antimatter [21] supposedly relying on its two spin directions, whichever was *CP violation* [6]; and perhaps PL exerts an isotropic gravitational field on cosmic hole -- *matter there influences inertia here* [31], in it *earth will move to right if no other forces* [29].

III. PARITY

A. Antimatter

Cosmic spin even likely is relevant to an imbalance of ordinary and anti matter [21] (antiparticle [22], too occurs in ordinary matter) that

satellite-based searches of cosmic rays for anti deuteron and anti helium particles have yielded nothing [23].

Now mentions a process of picturing Fig. 1. Initially in the summer of 2020 cosmos in it had no spin that was later added, considering that cosmos as a top (gyroscope) with a spin is more stable and vivid. And then, about after several weeks, one day when scanned it, two directions of cosmic spin was unconsciously associated with two types of ordinary and anti matters.

Namely,

left [24] $\leftarrow$ our universe: mirror universe $\rightarrow$ right,

or “vice versa”, implies that there may have a subtle relationship between cosmic background -- a gravitational field of PL -- and a spin universe that its neutron decay is

$$n \rightarrow p^+ + e^- + \nu_e$$

or

$$n \rightarrow p^- + e^+ + \nu_e$$

(in a mirror universe, if happen) giving rise to a parity (CP) asymmetry [25] world.

B. Matter

Our cosmic visible ordinary matters most are chemical elements that their origin currently is based on big bang [26] and steady state [27] theories. Here an assumption was:

$$2\gamma \rightarrow e^+ + e^- \rightarrow n \rightarrow p^+ + e^- + \nu_e.$$

That is, photons constitute electrons, positrons and nucleons then up to H and He atoms, which created nebulae to form various objects in sky. All rest of elements might result mainly from fission (decay) products of unstable nuclei, i.e.:

$$Z\ 1-2 \rightarrow Z > 82 \rightarrow Z\ 3-82$$

(see also a tangible nuclear structure of $Z\ 1-118$ elements) [28].

IV. INERTIA

Cosmic background possibly influences upon not only parity, but also inertia. Inertia in Newton's first law is:

*an object rest or motion remains, if
without external forces* [29]

that is in an open space short of "a fixed background", and it in Einstein's theory is:

*the gravitational coupling between matter
and spacetime* [30],

which these reference frames [7], [29], [30] were provisional and will enable someone indistinct or hard to understand. Here a simple way is appending cosmic surroundings

(matter there influences inertia here) [31]

forming a closed space

*(with appropriate boundary conditions of
closure)* [32].

Accordingly, Newton's 1 law could be modified into:

*in 0_f , an object rest or motion remains, if
without external forces,*

where 0_f is zero field, not nothing that has a background; *rest*: $0 - 0_f = 0$, 0 : zero velocity; and *motion*: $v - 0_f = v$, v : any velocity. Moreover, put Newton's 2-3 laws ($F = ma$ and $F_a = -F_b$, respectively) differently in brief is:

momentum in 0_f is conserved,

where momentum is $P = mv$, no basically different with angular momentum [33], $L = rmv$. Also, it could adapt to equivalence principle:

gravitational ($\downarrow$, centripetal) mass =

inertial ($\uparrow$, centrifugal) mass [34],

a difference between them [35] $\sim 10^{-12}$, which only two directions are reverse in 0_f .

Finally, experiences told us linear or nonlinear inertia is instantaneous effects – without delay, for at any point and any time resultant force on an object is zero in 0_f , cosmic, isotropic or stereo-gravity field different from mono-one (e.g., earth), ubiquitous and like ether [36].

Despite plus 0_f , a deeper root of inertia seems having not been discovered yet. Perhaps, completely to solve it needs to wait an emergence of "a theory of everything". To this, e.g., gravity, van der Waals [37] and weak [38] forces might be a difference of that, if opposite charges attraction was very faintly larger than like charges repulsion, i.e.:

$$e^+ \rightarrow \leftarrow e^- \geq e^{-/+} \leftarrow \rightarrow e^{-/+},$$

briefly,

gravitational force $\approx$ electromagnetic force,

so

mono gravitational speed [39,40] $\approx$ light speed,

as

*the author still expresses his conviction
that there is a relation, and his hopes that
it may be hereafter practically
demonstrated* [41].

V. CONCLUSION

In this work, horizon was broadened to cosmic background – photon lattice – where likely grew out cosmos then was a source of CMB [1], inertia [7], [29], [34], and mass conservation; also from Fig. 1 it implies that a cosmos of ordinary (left-) [24] or anti (right-handed) matter [21] (neither parity [6] conservation) might hinge on its critical spin (a relevant speed ~ 600 km/s) [14] directions (causing CMB dipole split temperatures) [16] eventually.

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