Digging in Search of a Universal Ether Model

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Abstract. In search of a more consistent significance which was, implicitly, expressed into the ether model previously suggested – e.g. *On Albert Einstein and his Relativities,* Proceedings of the NPA, 13th Annual Coference of the NPA, 3-7 April 2006, Vol. 3, no.2, pp. 233-245 – an intuitive extension towards the microscopic level is tried out. In fact it is a tentative approach to refine the field of hypotheses assumed in the above mentioned article. The approach is *descriptive* and aimed at framing a relational model which would associate matter and electromagnetism to the ether medium at the microcosm's level.

In view to test, experimentally, the plausibility of the so assumed hypotheses, the working principle of a simple device is outlined, its theoretical meaning is reviewed and the potential chances the device may have to check the reality of the involved hypotheses is evaluated.

In some previously published papers – factually [1], [2], [3] and [4] – the author forwarded a set of hypotheses oriented towards modeling the material universe as if immersed in a still not yet clearly perceived fluid ether environment. The author, by not being gifted with the ability of thinking in a purely high-level theoretical manner, offers only a simple, strongly intuitive model.

On the contrary of the example of much more elaborate theories, e.g. [5], the here suggested model does not suggests any intimate structure for the ether. It remains restrained to simply imagine the ether as a more or less continuous material medium until at the nuclei's level.

Asking for intuitiveness in imagining theories is, perhaps, not an unforgivable sin, but cutting down the scientific inquiry to that easy level would certainly be frustrating and quite sterile. Yet, believing strongly in the suggestive power of intuitive models – by which one may hope to reach a more rewarding understanding of the phenomena – the author tried an approach by extending its initial model, suggested in [1], towards the microscopic level; factually, by sketching how one may imagine the interaction between a material element and the supposed existent ambient ether. Or, more specifically expressed**:** by looking after the reasons why a bit of matter resists changing its momentary state of movement relative to the ambient, "wetting", ether.

A supposition – of a first approach kind – could be that the surrounding flow of ether generates in every material particle, essentially in the atom's nucleus, a kind of "polarization" who generates, outside it – meaning**:** in its **very near vicinity –** a counter-flow of ether imagined as a kind of dipolar flow oriented *against* the ambient extended flow, supposed, at large, uniform.

The hypothesis so configured is bound to respect a limitative condition**:** the induced counter-flow should not manifest itself, **significantly,** far outside the limits of the – by its very movement – polarized nucleus. It has to be so because, till now, no inertial or electro-magnetic consequences of that kind were ever observed at the macroscopic scale. It follows that if such a phenomenon really exists, its confirmation should be sought at the matter's most elementary aggregation level, meaning in the very near vicinity of the atoms' nuclei, the peripheral electrons being implied – because of their much smaller mass – at a non significant scale.

The above forwarded hypotheses and their imaginable consequences ask – if one intents to try some experimental confirmation – to involve the experiment at a deep enough level, i.e. the one at which the ether flow interacts significantly with the elements of matter.

Or, more explicitly expressed**:** to design the experimental device so that the used investigating means shall be enough intensely coupled with the **around**-the-nucleus ether "counter-flow". One refers here to the elementary counter-flows – till now only imagined – assumed to be induced by the material-elements' movement *relative to the ether at large.*

The simplest way to approach the so expressed problem seems to be to think on an electromagnetic-waves interference system as, for example, the one of the kind sketched in fig 1.

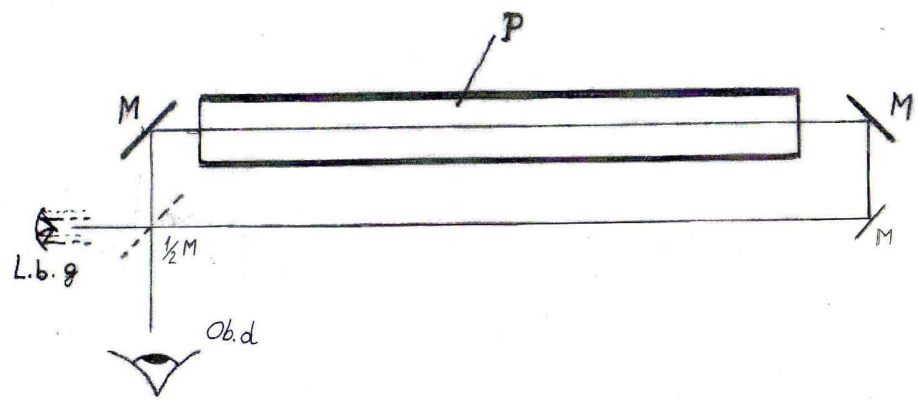

Fig. 1. Principle of the experimental device.

Lbg. = Laser beam generator 1/2M = half transparent mirror
M = mirrors Ob.d. = observation device
P = probe of transparent matter

Relative to the working principle of such a system it seems not to be useless to underline that the delivered interference spectrum depends only from the difference in length of the optic-paths, both laser-beams running *on exactly the same track*, yet in opposed senses. In such conditions a variation of the interference spectrum could appear *only as consequence of an induced anisotropy into the material probe P.* As a matter of fact, except for a flow of matter along P's axis, any other kind of perturbing influence – for example temperature determined dilations, if not alignment-deforming – should be, *intrinsically*, compensated by the propagation, in opposite directions, on the **same** closed track.

The aim of such an experience would be to find out if an "*ether wind*" can be detected**;** and, if so, what is its spatial configuration.

The probability that such an experiment may be able to deliver perceptible results is conditioned by considerations of a not yet quite well-determined knowledge, e.g. the following points of concern**:**

1) how far off the nucleus – i.e. into the *intra-atomic* space – does the induced ether counter-flow extends?

2) how intense is the dipolar momentum of the flow induced by the atom's movement relative to the ether at large?

3) how does electromagnetic waves propagate between, or through atoms of aggregated matter? Are they relayed by the atom's outer-electrons, or do they wander trough the intra-atomic space, up to the nuclei's external limits?

Those unknowns are sufficient to hinder any *a priori* imaginative answer.

Thinking in a *tertium non datur* mode, the result of any experiment of the above suggested kind should show**:**

or a perfect immobility of the interference specter *relative to time and/or spatial orientation* of the investigating system,

or clear-cut displacements depending on time and orientation.

Of some importance could be to underline here that if no observable result comes out – meaning the situation of the first kind above mentioned – one should not adopt the conclusion that *no material ether really exists*. This because, if one respects the logic recommendation "*absence of evidence does not mean evidence of absence"*, the three above mentioned interfering processes could explain, in a systematic mode, the absence of any **perceptible** result at the implied level. It could be so simply by lack of adequate specific experimental means, or not enough extended dimensional parameters. In that sense one may think at the possible screening effect – previously mentioned at point 3 – and try a break-through by running an as above assembled experience but modified by that the material probe P is replaced by an accelerated proton-beam, or an alfa-particle beam, trough which the laser ray should pass at an as sharp as possible angle – that in view to extend as much as possible the zone of action on the laser light. By modifying the intensity of the interaction between the high speed nuclei beam and the laser fascicle, one may hope to find out if the laser interference specter is affected by the moving nuclei, or not. And, by that, if "**c**" is – as Albert Einstein stated it should be – an absolute constant, or if, factually, it is otherwise.

In intent to evaluate the chances a device of the kind suggested in fig. 1 have to deliver readable results one may refer to an hypothetical model of electro-magnetic propagation through matter – as above assumed – or, more precisely, at how it works in the near vicinity of the atoms' nuclei.

Our basic hypothesis about inertia assumes that every nucleus, if located in a largely ambient ether flow of speed $\vec{V}_0$ **,** induces in it a counter-flow potential with a dipolar-like structure. Assuming – in a dramatically rough approximation – that the counter-flow's transverse speed is, at the nuclei's external limit, equal to **-V**, or,

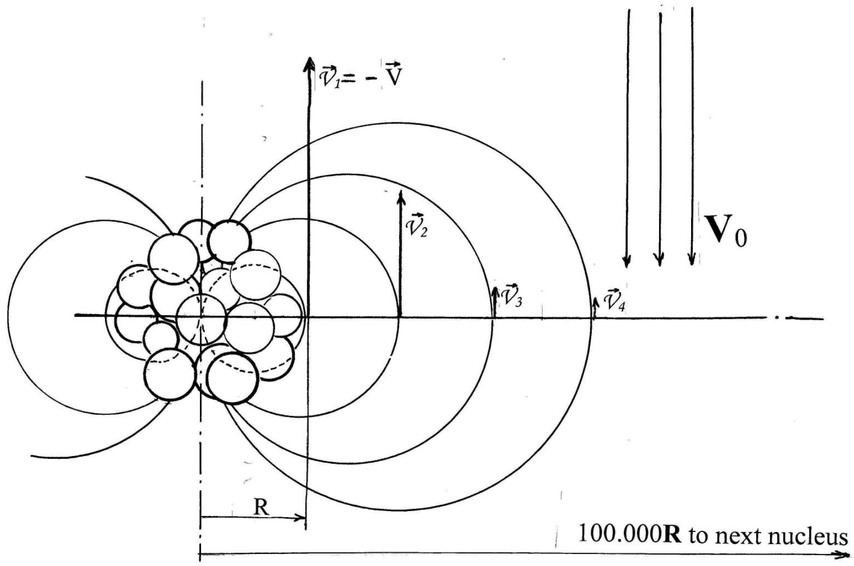

Fig. 2.Assumed spectrum of the induced „counter-flow" generated by a nucleus moving through the ambient, generally extended, ether.

explicitly expressed, $v_1 = -V$ (Fig. 2), equality in which **V** means the earth's speed relative to the at large ambient ether, and also accepting as valid that **v** is built by adding two, slightly displaced, 1/R shaped potentials, it results that **v**'s intensity should diminish inversely with the square of the distance to the activated nucleus. From this follows that the mean value of **v,** averaged along half the distance between two contiguous nuclei located into the material probe, (fig.2), is expressible as**:**

$$\left| \frac{1}{50.000} \int_{1}^{50000} \frac{V_0}{r^2} dr \right|$$

Assuming $\mathbf{V_0}$ to be of some 350 km/sec, a mean value of 0,014 km/s results for **v.**

Now, supposing that an electromagnetic plane-wave front penetrates the material probe and propagates through it, by following Feynman's thinking method – i.e. assuming the wave front at any moment being built in every point by summing the influence of all elementary spherical waves emitted in every point of the same wave, yet situated *at the preceding instan*t, one may assimilate the system as an ensemble subject to dynamic influences significant only in the very near vicinity of the nuclei. And, due to the fact those are evenly distributed on the general travel path of the wave, one may suppose the waves journey through matter as a coherent ensemble with a more or less constant shape.

If the above point of view is adopted, the difference in travel time between the two halves of the split laser beam – which propagate in opposed senses trough the material probe – when coming back to the split mirror, should be**:**

$$\Delta t = \frac{L}{c-v} - \frac{L}{c+v} = \frac{2Lv}{c^2(1-\beta^2)}$$

or, if expressed in phase-difference at recombination, measured in wave-lengths, it may be written as

$$\Delta\lambda = \upsilon\Delta t \equiv 2\frac{L}{\lambda}\frac{v}{c(1-\beta^2)}$$

In the frame of the above hypotheses on **v** and assuming that $(1-\beta^2)\approx 1$, the numerical value of $\Delta\lambda$ grown on the experimental device as above assumed should be**:**

$$\Delta\lambda = \frac{2}{0{,}532.10^{-6}}\frac{0{,}014}{300000} = 0{,}351$$

The value so obtained suggests that an experimental attempt of the here suggested kind is not necessarily absurd.

A suggested conclusion may be**:** let us try by experiment.

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[4] Idem, „Questioning the Reletivity of Inertia and Gravitation". In: *2007, 14th Natural Philosophy Alliance Conference, Storrs, CT, United States*

[5] Brian , M. E. De Silva & Philip, J. Lawson, „The Concept of an Ether". In: Contemporary Phisics. NPA information Base.