Lifetimes of C-Atom Decays

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The phenomenon of the entry of c-matter[1] into the material sector or the analogous entry of matter into the cosmic sector, involving the passage from space-time domain to time-space domain, may be called "scalar inversion" to emphasize the nature of the alteration of the reference frame. Scalar inversion involves two things: firstly, a transformation of motion in time (or space) to motion in space (or time), through the unit speed boundary, in all the three dimensions. Secondly, the emergence of a c-atom, for example, into the material sector can take place only from inside a single unit, since the three dimensions of time have nothing in common with the three dimensions of space—both having not more than a point contact, as it were.[2]

Therefore, in following up the calculation of various quantities across the boundary in scalar inversion, from the cosmic sector to the material sector, for example, consideration must be given to: (i) the loss of dimensional "information" during the alteration of the viewpoint from the temporal reference frame to the spatial reference frame and (ii) the space equivalent of time occurring within a single unit.

As a result of the first point above, it is known that the full influence of spatial (or temporal) effects does not get transmitted across the boundary except when it involves only one dimension. On the other hand, only a fraction 1/c in the case of two-dimensional effects, and a fraction $1/c^2$ in the case of three-dimensional effects gets transmitted.[3] I will refer to this as criterion No. II in the sequel.

Regarding the second point above, namely, concerning the relation between quantities within the outside single unit, "… The time region speed, and all quantities derived there from, which means all of the physical phenomena of the inside region… are… second power expressions of the corresponding quantities of the outside region."[4] I will refer to this as criterion No. IV. In order to find the lifetimes of the cosmic atoms in the material environment it is necessary to apply both the above criteria.

The first step in deriving the lifetimes is to recognize that, in view of the scalar inversion, the spatial extension of the c-atom, being the analog of the lifetime in material sector, bears a relationship to the latter. As such we start with the consideration of the spatial extension of the incoming c-atom. Now, scalar inversion is not possible with anything more than one unit in each dimension. Depending on the number of dimensions of the motion eventually acquired during the inversion process, the amount of space involved in the one, two and three-dimensional cases is respectively s, s^2 and s^3 (where s is the unit space expressed in the c.g.s. system). Let us refer to this as criterion No. I.

The remaining criterion, No. III, necessary for our calculation is the recognition of the fact that the temporal equivalent of a spatial extension s across the inversion boundary is s/c (where c, the unit speed, is expressed in the c.g.s. system). The result of applying the above four criteria to the one, two and three-dimensional situations is given in the following table.

1 "c-matter" is *cosmic matter*, matter that is composed of three dimensions of time and clock space, conventionally referred to as antimatter.
2 Larson, Dewey B., *Nothing But Motion*, North Pacific Publishers, Oregon, USA, 1979, p. 154.
3 Larson, Dewey B., *New Light on Space and Time*, Reciprocity Publishers, Utah, USA, 1965, p. 185.
4 Larson, Dewey B., *Nothing But Motion*, *op. cit.*, p. 155.

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Criterion No.	Number of Dimensions		
	1	**2**	**3**
i	s	s^2	s^3
ii	s	s^2/c	s^3/c^2
iii	s/c	$(s^2/c)(1/c)$	$(s^3/c^2)(1/c)$
iv	$(s/c)^{½}$	$[(s^2/c)(1/c)]^{½}$	$[(s^3/c^2)(1/c)]^{½}$
Result in seconds	1.233148×10^{-8}	1.520655×10^{-16}	1.875193×10^{-24}

The same result could have been obtained more simply though showing less details of the underlying process by directly noting that the clock-time involved in the one, two and three-dimensional cases of the decay is t, t^2 and t^3 respectively (where t_0 is the unit time expressed in the c.g.s. system). The measured values of the lifetimes could then be obtained by applying the criterion No. IV, as $t^{½}$, $(t^2)^{½}$ and $(t^3)^{½}$ respectively.

Further, in the calculations above if the extension space involved is taken as $\pi/4s^2$ and $\pi/6s^3$ respectively in the two and three-dimensional cases, based on symmetrical probability, instead of s^2 and s^3, we have the computed values of the lifetimes in the respective situations as 1.348×10^{-16} and 1.357×10^{-24} secs.

The acquisition of gravitational charges by the incoming c-atoms has an effect on the above lifetimes which can be evaluated in the following manner. In view of the scalar inversion, it must be noted that the gravitational charge of the material sector, being a two-dimensional rotational vibratory time displacement, is foreign to the space-time character of the basic rotational displacement of the c-atom. In the analogous case of a material atom, for example, a gravitational charge of the cosmic sector is tantamount to a magnetic charge in the material environment. Consequently the calculation of the influence of a rotational vibration of space-time direction opposite to that of the basic rotation, on various quantities requires the consideration of the appropriate interregional ratio.

For example, "…the motion that constitutes the charge is on the far side of another regional boundary—another unit level—and is subject to… inter-regional transmission factors."[5] Further, "…inter-regional ratio… accounts for the small 'size' of atoms. According to the theory…, there can be no physical distance less than one natural unit… but… the measured inter-atomic distance is reduced by the inter-regional ratio, and this measured value is therefore in the neighborhood of 10^{-8} cm"[6] In exactly the same manner, the acquisition of a gravitational charge by the c-atom, in view of the inter-regional ratio, has the effect of shortening the measured lifetime by a factor of 1/156.44. (While it is clear that the inter-regional ratio operates here, I am not certain that its value is 156.44 in this case.)

An atom is a double rotating system. The rotational vibration that is a gravitational charge establishes a coupling with one of these two rotational systems. In the case of an acquisition of one more gravitational charge, the second rotational vibratory displacement acquired acts on the second rotational system of the c-atom rather than adding to the previous system already modified by the first gravitational charge. As such, the computation of the lifetime in this case involves the application of the inter-regional ratio once more. Thus the measured lifetime in the case of two gravitational charges acquired is shortened by a factor of $1/(156.44)^2$ The lifetimes, with or without the gravitational charges, in the one, two and three-dimensional situations are, therefore, as follows:

5 *ibid.*, p. 163.
6 *ibid.*, pp. 154-155.

Dimensions	**Charges**	**Lifetime (sec.)**
1	0	1.233148×10^{-8}
1	1	0.788234×10^{-10}
2	0	1.520655×10^{-16}
2	2	0.621313×10^{-20}
3	0	1.875193×10^{-24}