

## The relativity

### A few general remarks on relativity from the new perspective of granular mechanics.

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Premises, features, causes and effects of relativity:

1. As it has already been postulated, an absolute reference frame may be introduced at cosmic level and all things will be further regarded to this frame (or observed from there) if it is not specified otherwise.

2. All the relativistic effects are only produced in material systems (elementary and composite particles - organized or not in atoms), starting from the quantum scale.

3. The relativistic phenomena occur due to the following characteristics of the constituent elements of material systems (the granular characteristics are described in [Prime Theory](#)):

a) their absolute speed limit, the speed of light in vacuum,  $c$ .

b) their granular consistency, and this granularity will impose:

- by the absolute granular speed  $C$ , this limit of effective speed,  $c$ .

- as all particles are in fact granular aggregations, a uniqueness and a simultaneity of their global movement (translation through the three-dimensional space and rotation) - see the recent article [Mass-Energy Equivalence](#).

c) an absolute speed limit  $c$  to the propagation of any interaction between them.

4. The consequences of relativity (dilations or contractions of various physical quantities, proper ones or observed) are only present in material systems, starting from the quantum level - we may thus consider all granular structures to which we can assign a dynamic mass. This dynamic mass, as it was already explained in my "Mass-energy equivalence" article, changes with the absolute velocity of that structure and consequently all its interactions that might affect the local time will also change. This phenomenon is mainly due to the averaged, spatial redistribution of all granular impulses within particles, which actually generates and allows their global translational movement. As things are interrelated, any increase of the *translational* speed leads to a decrease of the *rotational* one and to a mass increase; therefore, the frequency of all local interactions - i.e. the local time - also changes.

5. Gravity causes the same effect of dynamic mass increase in a single direction, and thus will similarly produce the dilation of local time.

6. In order to compare these effects in two different material systems (or two inertial Frames of Reference - FR) we will need to know their both absolute speeds, not only the relative one (according to [Theory of the Absolute](#)). These speeds (if they are getting close to relativistic values) determine the averaged values of the dynamic masses for all component particles and thus they establish the rates of time in those systems (and all the consequences resulting from here). On the movement directions, the relative speeds of the interactions are getting smaller, regardless of their absolute velocity value being  $c$ .

7. No structures are present at granular level, and the absolute granular speed is constant; consequently, the rate of the granular time is also constant.

8. Photons have no regular dynamic mass (there is no internal granular movement) and therefore they do not satisfy the above premises of relativity. Their changes in frequency - redshift or blueshift - (seen in different FRs) are caused by the Doppler effect:

- In case the sources and receivers are moving, the effect is caused in fact by the absolute velocity of photons  $c$  and by the nonzero time interval they are produced/absorbed. These things change their wavelength (effectively on emission and apparently on reception), depending on the speed these transmission and reception apparatuses are moving (in the direction of photons). At relativistic speeds, this phenomenon may also be explained as a variation of the local time's rates of flow with the absolute speeds of those devices.

- In case of variable *gravitational fields*, the effective wavelength of photons changes (and their frequency) when they pass through areas with a granular gradient (variations of the granular density of space - or of the fluxes on certain directions). If these gravitational fields are static, the shifting phenomenon can be explained (within the General Theory of Relativity) as a variation of the local time's rate of flow with the field strength.

9. As all matter components of a body are continuously moving, the absolute speed of each of them will vary continuously; when the body's global speed reaches relativistic values, its components will have, alternately, relativistic and non relativistic instantaneous speeds. The dynamic mass of these components, and hence their local time in relation with the nearby components, will vary in the same way. This body, seen as a whole, will therefore have averaged values (temporal and spatial) for both its mass and local time.

We can easily realize that relativity and its effects are intimately linked to matter and its motion, having as main cause the granular consistency of all material components and of the fields they are interacting with each other. The uniqueness and the absoluteness of the granular energy/impulse, as well as its specific mode to bind structures together, are all reflecting this way at quantum level and beyond.

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