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WHAT IS INERTIA

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The Summary

Science affirms that inertia is the resistance to change the motion status of a physical body. Erroneous in modern scientific views, as well as in Newton's ones is that the inertial resistance to change the motion status of a physical object is asserted to be innate to the object itself, which means it to be an **internal** force inherent to the object. The said inertial resistance has to be comprehended as an **external** force, specifically as a resistance of the surrounding medium. The source of inertial resistance is ether. The resistance of ether to the material objects motion is executed though the interaction of etheric particles (elons) and those surfaces of the objects' elements (atoms, molecules) that are pointed onto the interacting elons and are not screened by other elements. The sum of projections of the said object elements surfaces onto a plane perpendicular to the elons' interaction direction makes mass of the object. The value of the said mass may vary dependant on the orientation of the object relative to the direction of the said interaction. Etheric inertial resistance is analogous to the resistance exerted on material objects by other fluid media. The existing difference is provoked by its incomparable lesser viscosity. The absence of inertial resistance to a moving body free of any external forces action is a consequence of the d'Alembert's paradox. Due to that at very high velocities approaching the speed of light etheric resistance acquires values capable to diminish the velocity of an object, similarly to the natural deceleration of objects in water or atmospheric media, the first Newtonian law cannot be absolutely correct.

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According to modern scientific views (see http://en.wikipedia.org/wiki/Inertia) inertia is the resistance of a physical object to change its motion status, while numerically it is represented by the object's mass. There is no single accepted theory that explains the source of Inertia. Various efforts by notable physicists such as Ernst Mach, Albert Einstein, D Sciama, and Bernard Haisch have all run into significant criticisms from more recent theorists.

The modern scientific views only a bit differ from those of Newton who regarded inertia as "the innate force possessed by an object which resists changes in motion". Newton had not disclosed the nature of this force, as well as it remains undisclosed for all who share modern scientific views. Today as yesterday inertia is supposed to be innate to physical bodies themselves, and herein I see one of the most fundamental mistakes of modern and yet as well former physics. Because if inertia is a force innate to the object itself, it has to mean that relative to this object it has to be an **internal** force that cannot influence the object's state of motion. But such a force actually existing, there remains to presume that it is not internal but **external** one; that is it remains to presume that the said resistance is not the resistance of the object itself, but the one of that surrounding medium in which the object remains and with which it interacts. Inertia being active in absolutely all known media including vacuum, there remains to conclude that it represents resistance of that medium that fills all space even vacuum that is of ether. This resistance in addition to be quantitatively dependant on the object's motion parameters, must also be so on the parameters of the object itself, namely those associated with its mass.

The problem of mass was examined earlier in my article "MASS, GRAVITATION, AND DARK MATTER" http://wbabin.net/physics/dunaev.pdf, where there was elucidated that the mass of a body is represented by its effective area, which is integral area of the projections on a plane perpendicular to the direction of action of interaction agents (in our case – particles of ether or elons) of those surfaces of the body's atomic (molecular) nuclei which are pointed towards the interaction agents and are not screened by other nuclei.

Mass as an integrated area of the body's elements surface projections pointed towards the fluid medium fits the best, as I see, to the role assigned to it by the laws of inertia, the role it plays together with the said ether that comparatively to other fluids is characterized by the best fluidity and practically absent viscosity.

One of the best ways to understand the nature of a phenomenon is a comparative analysis of its analogs.

Everybody knows that to move and speed a ship, even a boat, up to a wanted velocity, as well as to slow it down is always more difficult than to keep it moving uniformly during its regular trip.

Everyone who practices or has been practicing rowing surely knows that while starting a stroke, a rower applies to the handle of the oar a maximum effort overcoming the strongest water resistance, arising when the blade is moving relative to water with an acceleration; while continuing the stroke without acceleration and with water streams already established the water resistance and accordingly the applied effort diminishes.

Everybody also knows that while making the stroke, the blade has to be perpendicular to the water surface, because otherwise it would not apply to it the maximum effort, and the rower's work would be useless.

Analysis of the given examples suggests such a principal scheme of the interaction of an object (ship, oar) with a surrounding fluid medium (water). The step of acquiring velocity (acceleration) characterizes itself by reforming fluid medium streams in a way that the neighboring fluid levels acquire velocities exhorting on the body only a minimum resistance. The step of regular motion of the object relative the fluid medium characterizes itself by conserving the formed streams, which needs only minimum energetic expenses and is not linked with any considerable resistance to the object's motion. The step of deceleration characterizes itself by the inverse reforming of the fluid medium streams, which is also connected with substantial energetic expenses and returning the streams to their initial state.

Here it is necessary to notice that although while analyzing the above examples we took into account the interaction of the object only with the most powerful factor of resistance which we mean to be water, indeed, if to neglect the surrounding air, the objects in the examples are interacting with two fluid media, one of which is water and the other – ether.

If to take as another example the motion in air of an artillery projectile and if to do not take into account the vertical component of this motion resulting from gravitation, then on the second stage of its flight, the one towards the aim, the resistance to the flight comparably to the preceding examples would be considerably less due to much lesser viscosity of air comparably to water, and the motion of the projectile would look as regular.

Returning to the interaction of a body with ether, in this case in vacuum, let us notice that in the same way during the first step (acceleration) elons interacting with the object's elements (atomic or molecular nuclei) modify the parameters of their motions forming streams accommodated to interact with the object, during the second step due to the streams formed at the first step the motion of the object continues regularly and practically with no resistance, and already on the deceleration step there takes place an inverse stream reforming, needing practically as much expenses as on the first step.

A practically absent resistance to the regular movement of a body in a freely fluid (not viscous) medium had been long ago noticed by science and entered its history under the name of d'Alembert's paradox http://en.wikipedia.org/wiki/Ship_resistance_and_propulsion.

Here may come a thought that after the end of action of the force provoking the object's acceleration, the further motion of the object in vacuum must continue with the acquired velocity quite regularly, which would completely agree with the first law of Newton and the just mentioned d'Alembert's paradox and would witness that ether were deprived of any viscosity. Indeed this is not completely the case, which may be confirmed by concepts of my previous article "REAL SENSE OF ELECTRIC CHARGE" http://wbabin.net/physics/dunaev3.pdf. The truth is that at very high velocities approaching the speed of light the etheric resistance acquires such values that can diminish the object's velocity similarly to the unconstraint deceleration of objects' movement in water or atmospheric media.

The first law of Newton approaches the ideal, but it cannot be so.

Conclusions:

1) Science affirms that inertia is the resistance to change the motion status of a physical body;
2) Erroneous in modern scientific views, as well as in Newton's ones is that the inertial resistance to change the motion status of a physical object is asserted to be innate to the object itself, which means it to be an **internal** force inherent to the object;
3) The said inertial resistance has to be comprehended as an **external** force, specifically as a resistance of the surrounding medium;
4) The source of inertial resistance is ether;
5) The resistance of ether to the material objects motion is executed though the interaction of etheric particles (elons) and those surfaces of the objects' elements (atoms, molecules) that are pointed onto the interacting elons and are not screened by other elements;
6) The sum of projections of the said object elements surfaces onto a plane perpendicular to the elons' interaction direction makes mass of the object;
7) The value of the said mass may vary dependant on the orientation of the object relative to the direction of the said interaction;
8) Etheric inertial resistance is analogous to the resistance exerted on material objects by other fluid media. The existing difference is provoked by its incomparable lesser viscosity;
9) The absence of inertial resistance to a moving body free of any external forces action is a consequence of the d'Alembert's paradox;
10) Due to that at very high velocities approaching the speed of light, etheric resistance acquires values capable to diminish the velocity of an object, similarly to the natural deceleration of objects in water or atmospheric media, the first Newtonian law cannot be absolutely correct.