The law of negligible influence in action

To better understand how the law of negligible action functions in nature, you can use the BlowStand1.exe computer modeling program. The collective http://pinopa.narod.ru/BlowStand1exe.zip file contains the mentioned executable program and working files in blo1 format. To present the functioning of the ZD law, parameters will be used here - coordinates in the 0xyz system and velocities - two interacting centrally symmetrical fields - particles. These parameters of the particles are saved in the working files: Episod1a, Episod1b, Episod1c, Episod1d and in the derivative files that were created after saving the parameters in them after some time of interaction of these two particles. The interaction of the particles lasted about 20,000 computational iterations, after this period the parameters were saved in the files Episod1a_19996, Episod1b_19996, Episod1c_19999, Episod1d_20000. The values of these parameters are shown in the list below.

Gravons	X	Y	Z
1	-2	0	0
2	3	0	-0,8

Velo	u(x)	u(y)	u(z)
1	3	0	0
2	0	0	0
3	Episod1a.		

Gravons	X	Y	Z
1	1,6231068266758	0	1,0375088065090
2	5,3756931733241	0	-1,8375088065090

Velo	u(x)	u(y)	u(z)
1	0,48084301494265	0	1,1005994002400
2	2,5191569850573	0	-1,1005994002400
3	Episod1a_19996.		

Gravons	X	Y	Z
1	-2	0	0
2	3	0	-0,8

Velo	u(x)	u(y)	u(z)
1	30	0	0
2	0	0	0
3	Episod1b.		

Gravons	X	Y	Z
1	57,764498461161	0	2,1671194541124
2	3,2235015388385	0	-2,9671194541124

Velo	u(x)	u(y)	u(z)
1	29,952914501053	0	1,1875807021810
2	0,04708549894679	0	-1,1875807021810
3	Episod1b_19996.		

Gravons	X	Y	Z
1	-2	0	0
2	3	0	-0,8

Velo	u(x)	u(y)	u(z)
1	300	0	0
2	0	0	0
3	Episod1c.		

Gravons	X	Y	Z
1	597,96866205348	0	0,2055918789686
2	3,0013379465201	0	-1,0055918789686

Velo	u(x)	u(y)	u(z)
1	299,99996417977	0	0,1036653910335
2	3,5820226096169	0	-0,1036653910335
3	Episod1c_19999.		

Gravons	X	Y	Z
1	-2	0	0
2	3	0	-0,8

Velo	u(x)	u(y)	u(z)
1	3000	0	0
2	0	0	0
3	Episod1d.		

Gravons	X	Y	Z
1	5997,9852530142	0	0,024386522276
2	3,0147469857618	0	-0,824386522276

Velo	u(x)	u(y)	u(z)
1	2999,9926263547	0	0,012202446734
2	0,0073736452480	0	-0,012202446734
3	Episod1d_20000.		

In each of the four episodes presented, the particles had the same initial positions in relation to each other. One of them - particle # 2 - was stationary at first, and particle # 1 had a certain initial velocity. The direction of velocity was such that the particles collided with each other via their potential shells with a radius of 1.4 length units. The initial velocity of particle 1 in each episode was different - they were the following velocity values: 3, 30, 300 and 3000 velocity units.

The interaction of particles with each other in the BlowStand1.exe execution program is based on the principle of mutual acceleration, similar to nature. Both particles have the same own parameters, i.e. each of them accelerates its neighbor according to the same mathematical function that includes a gravitational component and a structural component. The gravitational component is of particular importance during the interaction of particles at greater distances. On the other hand, the structural component plays an essential role at small distances between the central points of the particles. At these distances, the particles can form permanent structural bonds with each other - this happens when the particles are in the area of their neighbor's shell and their relative velocity is decelerated - or they can interact with each other, creating the impression of a collision and elastic rebound of one particle against another.

Mutual transmission of kinetic energy by particles occurs according to Newton's laws of dynamics, and thus also according to the principle of conservation of energy. The sum of the energies of the particles before the collision is equal to the sum of the energies of the particles after the collision for each episode. Taking advantage of the fact that the particles are uniform, compliance with the conservation of energy principle can be checked by comparing the sum of the squared velocities of the particles they have (in different directions) after the collision and before the collision.

$$0.48084^2 + 2\cdot 1.100599^2 + 2.519156^2 = 9$$

$$29.95291^2 + 2\cdot 1.18758^2 + 0.047085^2 = 900$$

$$299.99996417^2 + 2\cdot 0.103665391^2 + 0.00003582^2 = 9\cdot 10^4$$

$$2999.99262635^2 + 2\cdot 0.01220244^2 + 0.00737364^2 = 8.999956\cdot 10^6$$

There was some inaccuracy for the episode where particle 1 had an initial velocity of 3000 cU. it follows from this how it can be assumed that the execution program performed calculations at dt = 0.0001, i.e. it calculated with some approximation. At the low initial particle velocity 1, the error was imperceptible, but at high speed, the calculation error became visible.

The existence of the law of negligible action, which consists in the fact that as the relative velocity of particles increases, the interaction of particles becomes smaller and smaller, can be seen when the distances traveled by particle 2 and its velocities obtained in the system 0xyz are compared. By observing the behavior of the particles as they interact with each other in successive episodes, it can be seen that the intensity of the particle 2's response to the presence of particle 1 is lower when the initial velocity of particle 1 is higher, as shown below.

Episod1a_19996.blo1

$$L = \left[(5.3757 - 3)^2 + (1.8375 - 0.8)^2\right]^{0.5} = 2.592$$

$$V = \left(2.5192^2 + 1.1006^2\right)^{0.5} = 2.749$$

Episod1b_19996.blo1

$$L = \left[(3.2235 - 3)^2 + \left[(2.9671 - 0.8)^2\right]\right]^{0.5} = 2.179$$

$$V = \left(0.0471^2 + 1.1876^2\right)^{0.5} = 1.189$$

Episod1c_19999.blo1

$$L = \left[(3.0013 - 3)^2 + (1.0056 - 0.8)^2\right]^{0.5} = 0.206$$

$$V = \left[\left(3.582\cdot 10^{-5}\right)^2 + 0.1037^2\right]^{0.5} = 0.104$$

Episod1d_20000.blo1

$$L = \left[(3.0147 - 3)^2 + (0.8244 - 0.8)^2\right]^{0.5} = 0.66$$

$$V = \left(0.0074^2 + 0.0122^2\right)^{0.5} = 0.014$$

This decreasing intensity of the impact can be clearly seen on the basis of comparing the energy values of the particle 2 in the final effect, i.e. on the basis of comparing the squares of the velocity of particle 2. Thus, the amount of energy transferred in the following episodes is as follows:

Episod1a_19996.blo1

$$V\hat{}2 = \left(2.5192^2 + 1.1006^2\right) = 7.558$$

Episod1b_19996.blo1

$$V\hat{}2 = \left(0.0471^2 + 1.1876^2\right) = 1.413$$

Episod1c_19999.blo1

$$V\hat{}2 = \left[\left(3.582\cdot 10^{-5}\right)^2 + 0.1037^2\right] = 0.011$$

Episod1d_20000.blo1

$$V\hat{}2 = \left(0.0074^2 + 0.0122^2\right) = 2.036\cdot 10^{-4}$$

This account of energy transfer, which follows from the existence of the law of negligible action in nature, means, on the one hand, that at enormous velocities of particles - but also when they exist in the form of complex material structures - their destructive activity on other complex structures is diminished. On the other hand, this decreasing amount of transmitted energy, as discussed above, means that it is only this amount that the energy of the particles traveling at high speed is reduced by this amount. In these particles, this energy must be viewed as the loss which has been caused by the effect on these particles of "almost stationary" matter. In this case, the impact on the rushing particles acted as a brake. But there are devices - accelerators - that act on rushing particles to accelerate them. In total, only the direction of the impact on fast-moving particles changes - instead of braking, there is acceleration - but the law of nature remains the same. In order to obtain comparable increases in their velocity or increases in their energy at ever higher velocities of accelerated particles, incomparably more energy should be introduced. There is now an erroneous explanation for such a situation, saying that when particles are accelerated to ever higher velocities, their mass increases. As it results from the above, there is no increase in the mass of rushing particles - there is only the manifestation of the law of insignificant action.

When someone insightful reads the sentence in the previous paragraph: "In order to be able to obtain comparable increases in their speed or increases in their energy at ever higher speeds of accelerated particles, incomparably more energy must be put in", one may see some kind of contradiction that will be associated with the concept " comparability ". Because a little earlier it was mentioned that according to the law of conservation of energy, an accelerated particle can obtain exactly the same amount of energy as the particle that contributed to the increase in the speed of the previous particle will lose this energy. In this case, they are "comparable" amounts of energy. But in this case there is a direct mutual acceleration of the particles and the mutual transfer of energy by these particles. And, what is especially important, when dealing with the problem, the energy that has been lost (by one particle) is compared with the energy that has been obtained (by the other particle). But in addition, the energy of one and the same particle is compared, as that particle acquired or transmitted in the course of interaction during different episodes, at different relative velocities.

The situation with the mutual direct interaction of particles with each other is simple. But with accelerators, the situation is completely different. It is just such that in order to obtain comparable increases in the energy of accelerated particles that can be obtained at significantly different particle velocities, it is necessary to put into this process incomparably greater amounts of energy than the energy increases of the particles. This "incomparability" of energy in the case of an accelerator is due to the fact that energy transfer does not take place directly (as in the case of interaction of particles with each other), but through a complex process (or mechanism) of producing, converting and transferring energy to accelerated particles. The part of the energy that is lost in the accelerator and transferred to the particles is obviously comparable to the energy that the particles get due to acceleration. But an incomparably large amount of energy is lost and fled into space during this complex process of production, processing, and transmission. So in reality, when relativists today, who for obvious reasons do not yet know the law of insignificant action, unknowingly associate high energy consumption in accelerators with the increase in mass of particles accelerated to ever higher velocities, in their interpretation they present a kind of justification for high energy consumption.

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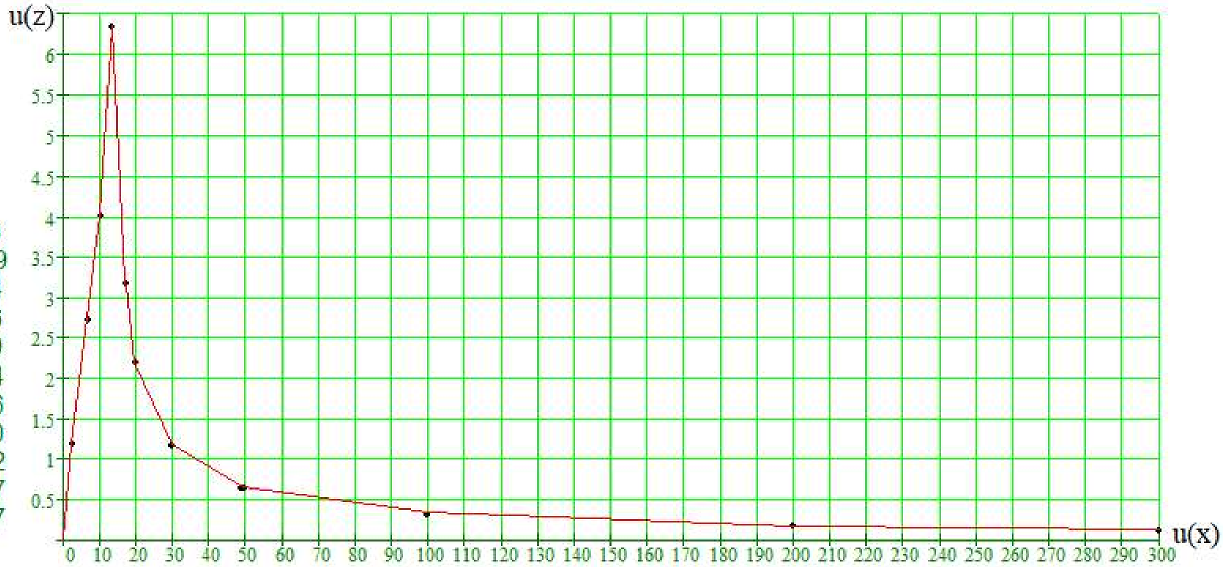
Chart added 2022.04.22

u(x)	u(z)
3	1.1876
7	2.6739
10	4.0024
13	6.3446
17	3.1629
20	2.2034
30	1.1876
50	0.6510
100	0.3142
200	0.1557
300	0.1037



Prawo znikomego działania w akcji
Początkowa prędkość cząstki 1 wzdłuż osi X - u(x); Końcowa prędkość cząstek 1 i 2 wzdłuż osi Z - u(z);
Закон ничтожного действия в акции
Начальная скорость частицы 1 по оси X - u(x); Конечная скорость частиц 1 и 2 по оси Z - u(z);
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Initial particle velocity 1 along the axis X - u (x); Final speed of particles 1 and 2 along the axis Z - u (z);