Kinetic energy of a charge moving at the velocity of *v* has two different values

Lubomir Vlcek

Rokytov 132, 086 01, Slovak Republic

Email: lubomir.vlcek@gmail.com

Abstract

Kinetic energy of a charge moving at the velocity of v ***has two different values:***

Kinetic energy of electron , (proton)

$T_{kin\ id}$ *=mc*^{2} *[ln |1-v/c|+ (v/c) / (1-v/c)]* *in direction of motion of electron, (proton) as particle,*

where v is velocity of electron, (proton).

Kinetic energy of electron , (proton)

$T_{kin\ ad}$ *= mc*^{2} *[ln |1+v/c|- (v/c) / (1+v/c)]* *against direction of motion of electron, (proton)* as wave,

where v is velocity of electron, (proton).

Shortened theory

3. Calculation of the kinetic energy T_{kin} of a body moving at the velocity of v

For the sake of simplicity let us consider for instance the gravitational field of the Earth. Analogically to (2.20)[2] for the intensity of the gravitational field one could write:

$$g_{mov} = g_{still}\left(1 - \frac{v}{c}\cos\vartheta\right)^2 \qquad (3.1)$$

Let us consider the physical processes in which kinetic energy is transformed into potential one and potential energy is transformed into kinetic one. There is a state in which the potential energy equals total energy of the body (while the kinetic energy equals zero) and the state in which kinetic energy equals the total energy of the body (while the potential energy equals zero). These extreme will help us to calculate the kinetic energy of body. For the potential energy we have

$$\mathrm{d}W_{\mathrm{p}} = m g_{\mathrm{still}} \mathrm{d}h \tag{3.2}$$

By integrating and utilizing of the relation (3.1) we have

$$T_{\mathrm{kin}} = \int \mathrm{d}W_p = \int_0^h m g_{\mathrm{still}} \mathrm{d}h = \int_0^h m \frac{g_{mov}}{\left(1 - \frac{v}{c}\cos\vartheta\right)^2} \mathrm{d}h$$

By substituting $g_{\mathrm{mov}} = \frac{\mathrm{d}v}{\mathrm{d}t}$, $\frac{\mathrm{d}h}{\mathrm{d}t} = v$

we get

$$T_{\mathrm{kin}} = m\int_0^v \frac{v\mathrm{d}v}{\left(1 - \frac{v}{c}\cos\vartheta\right)^2} \tag{3.3}$$

Solving by substitution $1 - \frac{v}{c}\cos\vartheta = z$

we get

$$T_{\mathrm{kin}} = \frac{mc^2}{\cos^2\vartheta}\left[\ln\left|1 - \frac{v}{c}\cos\vartheta\right| + \frac{\frac{v}{c}\cos\vartheta}{1 - \frac{v}{c}\cos\vartheta}\right] \tag{3.4}$$

while ϑ isn't $\frac{\pi}{2}$, $\frac{3\pi}{2}$

For $\vartheta = 0°$ we have the kinetic energy in the direction of motion

$$T_{\mathrm{kin}_{a}} = mc^2\left[\ln\left|1 - \frac{v}{c}\right| + \frac{\frac{v}{c}}{1 - \frac{v}{c}}\right] \tag{3.5}$$

For $\vartheta = 180°$ we have the kinetic energy against the direction of motion

$$T_{kin_{ad}} = mc^2 \left[\ln\left|1+\frac{v}{c}\right| - \frac{\frac{v}{c}}{1+\frac{v}{c}} \right] \tag{3.6}$$

If $0 < \frac{v}{c} = x << 1$ (i.e. $v<<c$)

utilizing the series $\ln(1 \pm x)$, $(1 \pm x)^{-1}$

the equations (3.5) and (3.6)will be changed in the equation $T_{kin_{id}} = T_{kin_{ad}} = \frac{1}{2} m v^2$

complying with the Newton's mechanics. In Table 2 the values of the kinetic energy are

$T_{kin_{ad}}$, $T_{kin_{id}}$. The total energy according to Einstein $\frac{m_0 c^2}{\sqrt{1-\frac{v^2}{c^2}}}$.

Table 2. Calculation of the kinetic energy T_{kin} of a body moving at the velocity of v according to Vlcek and according to Einstein

v/c	Vlcek ´s theory - **kinetic energy** against direction of motion as wave $T_{kin\ ad}$ = $mc^2[\ln\ \|1+v/c\| - (v/c)/(1+v/c)]$	Vlcek ´s theory – **kinetic energy** in direction of motion as particle $T_{kin\ id}$ = $mc^2[\ln\ \|1-v/c\| + (v/c)/(1-v/c)]$	Vlcek ´s theory $m = m_0 = const$ $(T_{k\ ad} + T_{k\ id})/2$	Einstein ´s theory T_{kin} = $mc^2 - m_0 c^2$
0.1	0.00439 mc^2	0.0057 mc^2	0.0050 $m\ c^2$	0.0050 $m\ c^2$
0.2	0.0156 mc^2	0.0268 mc^2	0.0212 $m\ c^2$	0.0200 $m\ c^2$
0.3	0.0316 mc^2	0.0719 mc^2	0.0517 $m\ c^2$	0.0480 $m\ c^2$
0.4	0.0508 mc^2	0.1558 mc^2	0.1033 $m\ c^2$	0.0910 $m\ c^2$
0.5	0.0722 mc^2	0.3068 mc^2	0.1895 $m\ c^2$	0.1550 $m\ c^2$
0.6	0.0950 mc^2	0.5837 mc^2	0.3393 $m\ c^2$	0.2500 $m\ c^2$
0.7	0.1174 mc^2	1.1293 mc^2	0.6233 $m\ c^2$	0.4010 $m\ c^2$
0.8	0.1434 mc^2	2.3905 mc^2	1.2669 $m\ c^2$	0.6670 $m\ c^2$
0.9	0.1680 mc^2	6.6974 mc^2	3.4327 $m\ c^2$	1.2930 $m\ c^2$
0.99	0.1906 mc^2	94.3948 mc^2	47.294 $m\ c^2$	6.9200 $m\ c^2$
1.0	0.1931 mc^2	infinite	infinite	infinite

Direct measurement of the speed in the experiments Kirchner[3], [4], Perry, Chaffee [5]

For v/c = 0.08-0.27 can not yet prove the validity of Vlcek's theory[2] or Einstein's theory[1].

Consequence.

The main differences between incompetent Einstein's theory[1] and the latest knowledge[2]are:
1.Form of Intensity of the Moving Charge Electric Field is asymmetrical,
2. Form of the interference field is non-linear,
3. Kinetic energy of a charge moving at the velocity of v has two different values:
Kinetic energy of electron , (proton)
$T_{kin\ id} = mc^2 [\ln |1-v/c| + (v/c) / (1-v/c)]$ in direction of motion of electron, (proton)
where v is velocity of electron, (proton).
Kinetic energy of electron , (proton)
$T_{kin\ ad} = mc^2 [\ln |1+v/c| - (v/c) / (1+v/c)]$ against direction of motion of electron, (proton)
where v is velocity of electron, (proton).
These are the main differences between incompetent Einstein's theory and the latest knowledge.

Vlcek simplifies knowledge in physics:
Baryons (and mesons) are protons (or alpha particles) with different speeds.
In direction of motion of the proton (or alpha particle) = baryon,
against the direction of motion of the proton (or alpha particle) = meson.
Leptons (and neutrinos) are electrons with different speeds .
In direction of motion of the electron = lepton,
against the direction of motion of the electron = neutrino.
Consider the experiments at CERN and particle decay mode see [9] , [10] and [11].

References

[1] A. Einstein : Sobranie naucnych trudov v cetyrech tomach pod redakciej I. E.TAMMA, Ja. A. SMORODINSKOGO, B. G. KUZNECOVA, Izdatelstvo "Nauka", Moskva 1966

[2] L. Vlcek, : New Trends in Physics, Slovak Academic Press, Bratislava 1996, ISBN 80-85665-64-6. Presentation on European Phys. Soc. 10th Gen. Conf. – Trends in Physics (EPS 10) Sevilla , E 9 -13 September 1996

[3] F. Kirchner : Über die Bestimmung der spezifischen Ladung des Elektrons aus Geschwindigkeitsmessungen, Ann. d. Physik [5] **8**, 975 (1931)

[4] F. Kirchner : Zur Bestimmung der spezifischen Ladung des Elektrons aus Geschwindigkeitsmessungen , Ann. d. Physik [5] **12**, 503 (1932)

[5] Ch. T. Perry, E.L. Chaffee : A DETERMINATION OF e/m FOR AN ELECTRON BY DIRECT MEASUREMENT OF THE VELOCITY OF CATHODE RAYS , Phys.Rev.**36**,904 (1930)

[6] FIZEAU, M. H.: Sur les hypothéses relatives a l'éther lumineux. Ann. de Chim. et de Phys., 3e série, T. LVII. (Décembre 1859) Présente á l'Academie des Sciences dans sa séance du 29 septembre 1851.

[7] KNOPF, O.: Annalen der Physik, Vierte folge, Band 62, 1920 :"Die Versuche von F. Harress uber die Geschwindigkeit des Lichtes in bewegten Korpern, von O. Knopf. p. 391 – 447

[8] KAUFMANN, W.: Annalen der Physik, Vierte Folge, Band 19, Leipzig, 1906 Verlag von Johann Ambrosius Barth p. 487-552

[9] Great table of elementary particles. http://www.trendsinphysics.info/

[10] K Nakamura *et al* (Particle Data Group) 2010 *J. Phys. G: Nucl. Part. Phys.* **37** 075021

[11] Particles, waves and trends in physics http://www.trendsinphysics.info/

http://vixra.org/pdf/1409.0090v1.pdf ,

http://vixra.org/author/lubomir_vlcek

https://tuke.academia.edu/LubomirVlcek

http://www.trendsinphysics.info/